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Vol. VIII, No. 9 SEPTEMBER, 1919

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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Published Monthly by the American Pharmaceutical Association: Office of Publication, 211 Church St., Easton, Pa. Editorial Office, 253 Bourse Building, Philadelphia, Pa. Annual Subscription, $4.00; Single Numbers, 35 Cents.

THE SIXTY-EIGHTH ANNUAL CONVENTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN WASHINGTON, D. C. DURING THE WEEK BEGINNING MAY 3, 1920.

The American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy will also meet in Washington during week of May 3, 1920.

Entered as Second-class Matter, January 23, 1917, at the Post Office at Easton, Pa., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized July 01, 1918.

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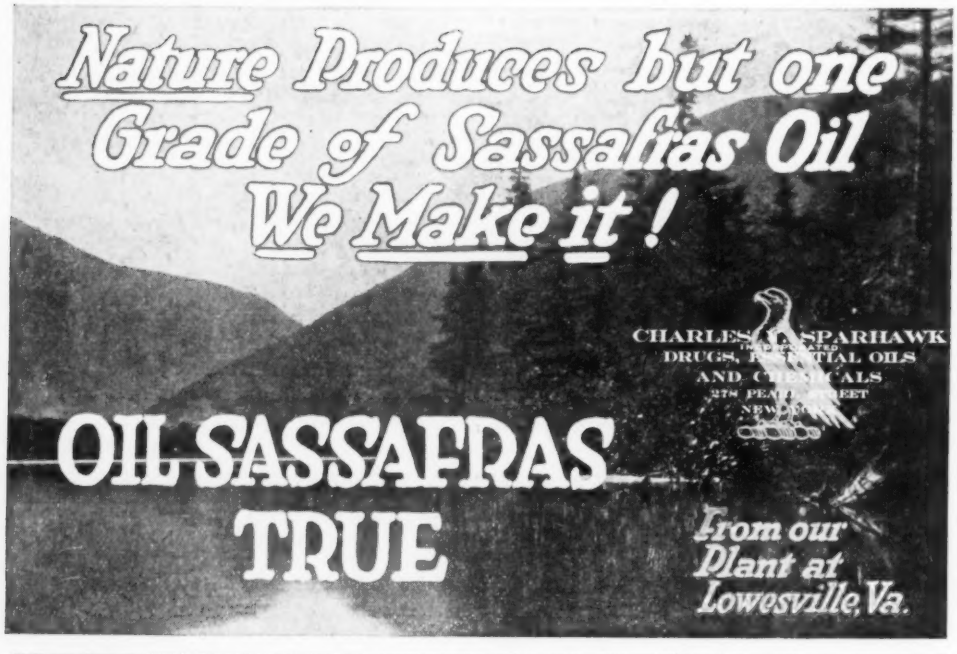
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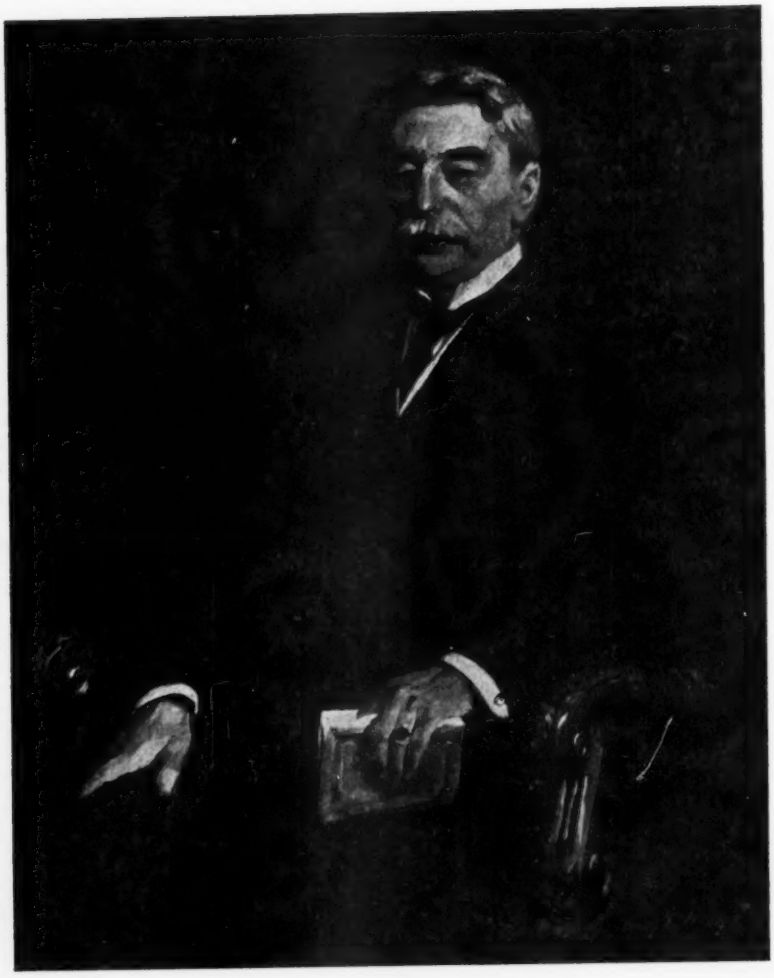


EDWARD MALLINCKRODT

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. VIII SEPTEMBER, 1919 NO. 9

EDWARD MALLINCKRODT

Few, if any other, members of the American Pharmaceutical Association have achieved as marked success in the commercial world as has Edward Mallinckrodt, president of the Mallinckrodt Chemical Works. Besides the interests represented by this firm in various parts of the world, Mr. Mallinckrodt, as may be surmised, is associated with many other business and financial institutions.

He was educated in the public and private schools of this country. This was followed by a training in chemistry in Germany. He began his business career in 1867 as a member of the firm of G. Mallinckrodt & Co., which was incorporated, in 1882, as the Mallinckrodt Chemical Works.

In pharmaceutical educational work and organizations Mr. Mallinckrodt became interested while a young man. He has served as president and during several terms as trustee of the St. Louis College of Pharmacy, in which school he established a scholarship. He is a life member of the American Pharmaceutical Association, which he joined in 1869. While not active in the affairs of the Association, he has always manifested a keen interest in the proceedings and accomplishments of the A. Ph. A. in the betterment of pharmacy. He is also a life member of the Missouri Pharmaceutical Association, which he joined in 1885.

As a director of Washington University, Mr. Mallinckrodt has given particular attention to the Medical School, making large endowments and devoting much of his own time to the welfare of the school. He is also a trustee of the St. Louis Art Museum and particularly interested in the Missouri Botanical Garden, of which he is a director. In these positions he has proved himself to be a vigorous and effective worker. His decisions are never rash nor hasty but given with promptness and efficiency.

As a man of active sympathies for the sick and unfortunate, we find Mr. Mallinckrodt looking personally after the general welfare and policies of St. Luke's Hospital and also giving substantial aid to the St. Louis Provident Association and a helpful interest as a director of the St. Louis Children's Hospital.

He is a member of the American Association for the Advancement of Science, the American Chemical Society, the American Institute of Chemical Engineers, the Society of Chemical Industry of Great Britain, Deutscher Chemiker Verein of Berlin and the St. Louis Academy of Science. He finds time to look over the transactions of these organizations as well as those of many other bodies with which he is affiliated.

Mr. Mallinckrodt is quiet in action and modest in appearance. He actually shrinks from publicity. It is only on close acquaintance that we realize his purposeful coolness and the calm determination with which he combines the rare faculty of quickly absorbing the essential features of a subject. While constantly handling large transactions, he is also a student of minute details, which are readily grasped by his comprehensive mind. He has a wonderful human understanding and sympathy when dealing with business associates and employees. Many persons have been with his firm for almost a lifetime.

Taken all in all, it is seldom that we find an individual in any walk of life with such extensive interests, making helpful contributions not only in his particular calling but to mankind in general. HENRY M. WHELPLEY.

A MESSAGE FROM THE PRESIDENT OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

To the Members of the A. Ph. A.

Greeting:

FELLOW MEMBERS:

At the Sixty-seventh Annual Meeting of our organization upon the undersigned was conferred the honor of the highest office—the Presidency. His responsibilities begin from the date of his installation. That his work may be of the highest efficiency it requires the coöperation of every member.

This coöperation may take the form of solicitation for membership. Each member should constitute a committee of one to coöperate with the Chairman of the Membership Committee, William B. Day, 701 South Wood St., Chicago, Ill. This year we had an addition of nearly 600 members. Next year we should have the banner increase of at least 1,000 members. Think of it, 45,000 druggists in the United States—3,000 present members (less than 8 percent)! If pharmacy is to be influential it will be through representation. What use is it for us to go to Congress and ask for a hearing when we confess that your Committee represents only 8 percent of the pharmacists of the United States?

From time to time your president hopes to bring items before you, soliciting your earnest coöperation.

Very respectfully,

Signed, L. E. SAYRE.

EDITORIAL

E. G. EBERLE, Editor 253 Bourse Bldg., PHILADELPHIA

THE HIGH LIGHTS OF THE NEW YORK MEETING.

THE recent New York meeting of the American Pharmaceutical Association was a phenomenal success. The attendance was large, the interest keen, the discussions animated, and real constructive work of the highest order was done, while the generous, warm-hearted hospitality of the New Yorkers was beyond all praise. System made it possible for the Local Committee to coördinate pleasure with business; "Let Your Watch Be Your Guide" was duly observed in conforming the programs of the sessions with the social functions. The registrations were above preceding years and the accession of membership during the year reached the highest mark in the Association's history.

It is difficult to point out the outstanding features of the meeting; they were so many and varied. But perhaps the most striking was President LaWall's address, which was clear, direct and full of "meat" for the betterment of the Association. It was so different from the conventional address so often presented to organizations—long, full of ancient history, statistics, and dry as dust. It was brief, virile and full of constructive thought.

Of equal importance for the future welfare of the Association was Chairman F. H. Freericks' report of the work of the Advisory Committee on Soldier and Sailor Pharmacists. It was splendid and potential in its possibilities. Chairman Freericks pointed out that there are in this country 10,000 pharmacists who have seen active service in the World War. These are young men; they will be the future leaders of American Pharmacy, and if they can be induced to enlist under the banner of our organization no mind can measure the influence for good they can wield for the betterment of the conditions of pharmaceutical practice in this country under the aegis of the American Pharmaceutical Association.

A forward step was taken by the adoption of the President's recommendation whereby an Executive Committee of the Council is created. If deemed necessary this Committee is to convene during the interim of Association meetings for the transaction of business. Among other duties the Committee is to study approved

resolutions and recommendations for the purpose of activating those of value under present-day conditions, if deemed practicable and advisable. While the move necessitates the expenditure of money, the results derived will prove the wisdom of this action by the accomplishment of things worth while.

The Association made affiliation of State Associations feasible and attractive by the proposal whereby, when fifty-one percent or more of the State Association affiliates—are members of the American Pharmaceutical Association—the Treasurer of the A. Ph. A. is authorized to remit annually into the treasury of the State Association one dollar for every member of the latter who is also a member of the American Pharmaceutical Association. This will enable State Associations to defray the annual expenses of their delegates, and, when the membership is large, provide funds for legislation, publicity, etc.

The movement started by the Committee on Federation to establish a Committee on Pharmaceutical Publicity is momentous. The importance of this action, together with that on the affiliation of related organizations in the House of Delegates, is again noted in the succeeding editorial.

The decision of the Association to go forward as rapidly as practicable with the preparation of the book of unofficial formulas will be received with approbation, not only by the members but by all engaged in related lines and who need a reliable compilation of this kind.

The report of the Treasurer was indicative of healthy growth of the Association and spoke for further accomplishments in behalf of American pharmacy.

This editorial would become very much extended by an attempt to outline the work of the Sections, and comparisons of results are not easily made, because their purposes differ. The addresses and reports will convince the members that real constructive work was done; the interest in the sessions was unusually strong.

The American Conference of Pharmaceutical Faculties reaffirmed its decision to require completed high school education of the prospective students for admission to Colleges of Pharmacy and graduation from the latter as a prerequisite to Board examinations, in 1923. Considerable discussion was devoted to the matter of publicity, as recommended by the Committee on Federation. The consensus of opinion was that the public should be correctly advised relative to the importance of pharmacy in matters of public health and impressed that pharmacists are trained for their work and deserving of related recognition. Concurrent action was taken by the National Association of Boards of Pharmacy.

The predominant feature of the latter convention was the address of President Culley, outlining an organization plan whereby the United States is divided into eight districts; for each a Vice-President is to be elected, who shall represent the Association. Endorsement was given to the requirement that completed

high school education of candidates for examination, and graduation prerequisite, should become effective in 1923. The Association approved the recommendation of the President that the Fairchild Scholarship should be awarded on the basis of a competitive examination to a second year student of a Conference school. This recommendation was practically approved to become effective for 1920 in the joint session of the Section on Legislation A. Ph. A. with this body and the American Conference of Pharmaceutical Faculties.

The award of the Joseph P. Remington Honor Medal demonstrates that pharmacists have vision; that they are possessed of altruism. It constitutes a memorial to a distinguished pharmacist, and provides an annual acknowledgment of the service in and for pharmacy of someone still with us. The award of th is year meets universal approval.

The following were elected to honorary membership in the American Pharmaceutical Association:

Prof. Leon Guignard, Honor President, Ecole de Pharmacie, Paris, France; Prof. Eugene Collin, Chemist Central Laboratory for Repression of Frauds, Paris, France; Prof. Emile Bourquelot, Paris School of Pharmacy, Paris, France; J. H. Maiden, Director Botanical Garden, New South Wales, Sydney, Australia; Wm. Kirkby, Manchester, England, President British Pharmaceutical Conference; Sir William Glyn-Jones, London, England, Secretary Pharmaceutical Society, Great Britain.

Taken as a whole, the meeting was a big success and in many respects marked and characterized by the city in which the convention was held.

The nation's Capitol was chosen for the next meeting, during the week of May 3. The selection is opportune, for 1920 is the centennial year of the U. S. Pharmacopoeia, and the Pharmacopoeial Convention assembles in Washington on the tenth of May. E. G. E.

COÖRDINATED EFFORT AND PUBLICITY NEEDED FOR PHARMACEUTICAL PROGRESS.

FEDERATION of the drug interests may not be possible at this time, but there should be united and coördinated effort in matters that concern all of them; solidarity of interest should be championed by solidarity of effort. We are in the throes of revaluation of things and pharmacy with everything else will

be subjected to the analysis and judgment of not only those engaged in pharmacy but those served by pharmacists.

The greatest need, therefore, of pharmacy is coördination or unity of effort and purpose. We know that much of the effort of pharmacy, whereby greater service would have been rendered our military organizations, failed because of lack of coördination. The interests did not coöperate; each class was concerned with its importance instead of presenting the claims of pharmacy through a central organization. We have in the National Drug Trade Conference such a body, and in the House of Delegates of the American Pharmaceutical Association an organization wherein the great questions relating to pharmacy and the drug business can be systematically studied and the course of pharmacy and the drug business directed. Progress of the times will not cease; there can be no stopping the course of evolution, so it is necessary for pharmacy and the drug business to adopt policies that are adaptable to progress.

Pharmacy must further evolve from an art of observation and empiricism to applied science based on research; the spirit of the votaries must be alert, and they must be able to interpret general progress, so that pharmacy will keep abreast of the times with other lines of activity.

The importance of the various drug interests may be fully understood by those engaged therein, but a related appreciation must be awakened in the public. The contemplated committee on coöperative pharmaceutical publicity, representing the various interests of pharmacy, is a move in the right direction. The possibilities are shown in the well-planned efforts and splendid success of the American Medical Association and the American Chemical Society. Before this medicine and chemistry were sealed books to the public; they may be now, but certainly a greater interest in their importance has been instilled; pharmacy may well profit by their examples. E. G. E.

LIFE IS A BANK, WE GET FROM IT AS WE GIVE.

"What we have brought to life, whether it be guilt-edged securities of sacrifice on the unredeemable trash of passion or indifference, is in the vaults of life for us to draw against until the funds are exhausted. We draw on the vaults of life as we have given plus the interest. If what we get out of life makes us discontented, there is only one remedy—give to life more wisely and more lavishly."

PRESIDENTIAL ADDRESS OF CHARLES H. LAWALL, PRESIDENT OF THE AMERICAN PHARMACEUTICAL ASSOCIATION 1918–1919

The honor and the responsibility which have come to me through the election to your presidency are intensified upon this occasion by a realization that we are meeting for the fifth time in the history of the American Pharmaceutical Association in the foremost city of the greatest country in the world.

Time, the nimble tyrant of the ages, whose footsteps we measure by the system which originated in the fertile brain of some forgotten Egyptian philosopher, has wrought many changes. Nearly three generations have passed since the American Pharmaceutical Association had its initial meeting in 1852. During this period, and especially within the memory of the present generation, transformations have taken place or are now occurring which are almost revolutionary in their effect upon the practice of pharmacy.

CHARLES H. LAWALL

Standards which served to guide our predecessors are frequently found to be obsolete. The radical changes in the practice of medicine, the marvelous developments of chemistry, the irresistible extension of commercialism have combined to effect alterations undreamed of by those who laid the foundation of this organization. Even the landmarks have suffered metamorphoses so that there exists a gap between the past and the present which can be bridged only by those familiar with the intervening history, and even such would fear to prophesy as to what the future will bring forth.

In Article IX of the By-laws of this Association, referring to the duties of the President, it is stated that:

"He shall present at each annual meeting an address embodying general scientific facts and events of the year, or discuss such scientific questions as may to him seem suitable to the occasion."

Not for many years has an address, such as is contemplated in the paragraph quoted, been delivered, nor do I intend presenting one of that kind now. I quote the article to show how far afield we have traveled even from our own rules and to emphasize the necessity for our committee on by-laws to pay greater attention to details of this kind in making the changes which are from time to time found necessary.

For many years it has been the custom in most national and state associations for the presiding officer to present a survey of the entire field of activities which have a bearing upon the welfare of the body, and in the light of his experience and observations to make recommendations and suggestions for the development and progress of the association. This does not necessarily imply that an

illusion of infallibility accompanies the elevation to the honor, although this is unfortunately sometimes true. It does mean that for the period of his office, the president should, if he realizes his opportunities and responsibilities, spend such time in studying his field of work and conferring wherever possible with those who are more experienced and wiser in the affairs of the association than he, so that, in the language of science, he may act as a crystallizing nucleus, around which may develop the geometric form of the perfect twin crystal of efficiency and progress.

The solution in which this change must be imagined to take place is the membership of the association. In following the simile still further it will be realized that this solution is not always homogeneous and transparent. As there are sometimes colloids present which prevent crystallization in a real solution, so there are present in the membership factors which prevent the realization of our aims.

A perfect membership in any organization (although I have never known of an instance where the ideal was realized) is a membership composed exclusively of workers. Most organizations, and ours is no exception to the rule, are composed of two classes of members, *i. e.*, a small proportion who work all the time and a very large proportion who do little or nothing, even when asked to help, but whose strong suit is criticism of the way in which things are done. Each of these classes makes the other possible, for the workers have so much to do that it is a wonder more mistakes are not made.

The majority of the members in any organization are those who contribute dues, receive the publications and for exercise spend their time wandering in the labyrinth of dissatisfaction, all oblivious of the exit which is found through the gate of service. There is no simple remedy for this defect, of which I am aware, although I believe much progress could be made if more young men could be induced to take an active part in association work and if some of the older members would be content to serve in advisory capacities.

One of the greatest faults in most association work lies in the perpetuating of committees of almost the same personnel year after year. It is true that where a committee does its work well it would seem like injustice or lack of appreciation to make radical changes, but if the larger meaning of progress is once appreciated it will be found to include not only the accomplishments themselves but also the instruments by which they were brought about. In the immortal words of a well-known American "There is glory enough for all." Why should we not therefore share it?

In this connection, I would again direct attention to the fact, emphasized by former presidents, that we have so many committees that when the time comes for the president to make his appointments, and he begins to study the situation, he is likely to fear that the membership list will be exhausted before all of his committees are filled.

The growth of membership in our Association during the past year has been phenomenal. It is very gratifying and has been accomplished mostly by personal work rather than by correspondence. Many of the colleges are to be commended for persuading the members of the graduating classes to join the Association. As has been well said by a former president of this organization,

"The key to success lies in the extension of membership," and our greatest hope for the future lies in the number of young men whom we can induce first to join and then furnish with convincing reasons why they should retain their membership, partly by giving them responsibilities and opportunities of service. The benefits of belonging to our Association must be made so apparent that those who are on the outside will want to come in and those who are on the inside will want to stay in.

The local branches are in fairly good condition, the most discouraging feature seeming to be the small attendance at meetings except when some unusual program is offered. One of the most encouraging phases of the year's work is the establishment of a local branch at Wilkes-Barre, Pa., embracing the pharmacists of the surrounding territory known as the Wyoming Valley. Every pharmacist in this territory has been enrolled and they have succeeded in improving general conditions, shortening the drug store hours so that they extend from 9 A.M. to 9 P.M. during the winter months and in other ways illustrating the advantages of organization and coöperation. This should be an inspiration for pharmacists in many other localities throughout the country.

I feel that we are derelict in our obligations to the past, our duties to the present and our responsibilities toward the future in not paying proper attention to the importance of our code of ethics. The soul or essence of a professional organization is its code of ethics. That of the A. Ph. A. is not given sufficient publicity. It has never, to my knowledge, been revised and brought up to date and it is so long since it has been printed and circulated that nobody remembers when that last happened.

Recommendation No. 1, regarding code of ethics.

I recommend that the Committee on revision of constitution and by-laws be authorized and directed to immediately revise the code of ethics and submit the revised form to the Council for approval and adoption and that this revised code of ethics be then printed on or distributed with each membership application blank as constant evidence of our professional ideals.

There is no question as to the value of our organization to the majority of the members who belong to it. There is no doubt, either, as to the great increase in the overhead costs to the Association and if things continue in the same proportion we shall soon have a deficit in the treasury. As we have long given more than value for the money expended for membership dues and as our publications are undoubtedly worth more than we have been charging for them, I believe that instead of pricing the Year Book and Journal at $4.00 per annum each and charging annual dues of $5.00 (including both publications) the value of these two publications should be placed at $5.00 each when subscribed to separately and the annual dues (including both publications) should be $7.50.

Recommendation No. 2. Referendum on raising dues.

I therefore recommend that a referendum vote on this matter be taken at the time of sending out the ballots for the annual election and if seventy-five percent of the members voting express themselves in favor of raising the dues as proposed, that the dues be so raised at the beginning of the next fiscal year.

The House of Delegates in its reconstructed form should add strength to our organization. It is too early to say just what its value will be as it will depend

largely upon the personnel of its officers and the degree of coördination exhibited between it and the main body.

Recommendation No. 3. House of Delegates.

I believe that much benefit would be derived by changing the by-laws so that the Chairman or presiding officer of the House of Delegates shall be the First Vice-President of the Association, and the officers of the House shall be members of the Council and that the first general session of the Association and the first session of the House of Delegates be made a joint or coincident session at the future annual meetings. I recommend that these changes be made in our by-laws and procedure.

The monthly journal of the Association has more than fulfilled the expectations of those who were responsible for its inauguration seven years ago. I wish to express my personal appreciation of the way in which it has been handled during the past year so as to keep the expenses down to a minimum and at the same time maintain its high standard as a representative publication of American Pharmacy. The Association is fortunate indeed in having as its editor one who, with singleness of purpose and unselfish motives, devotes his every effort to the upbuilding of this our most important asset.

The Year Book, that monumental record of our professional achievements, has also made great progress under its present editorship and it is a pleasure to report that the coming year will probably see the publication of the extra volume which will bring it up to date. If our Association had done nothing else but transmit to posterity the publications which have been issued under its authority, its existence would have been fully justified, for they alone constitute a library which if properly arranged and intelligently used is indispensable to the right practice of pharmacy both scientific and practical.

Recommendation No. 4, regarding research.

The scientific achievements, which have been so largely responsible for the success of the Allies in overwhelming the Teutonic aspirations toward world domination, have been primarily based upon research. Pharmacists have contributed their share in this respect although almost entirely without credit being given to the profession itself. It is our duty to continue our efforts along this most important line of progress irrespective of where the credit is placed. I therefore recommend that, notwithstanding the smallness of the fund now available, the Committee on Research be directed to take such necessary steps as will result in the accomplishment each year of some investigation which shall be published and for which credit shall be given to the American Pharmaceutical Association.

This committee should also offer to coöperate with other associations planning research work along cognate lines and should keep in constant touch with the portion of the field of scientific investigation which properly belongs to pharmacy, standing clear of any movements, however, which are not wholly based upon service to the profession as a whole or to the public, which is the ultimate beneficiary in any results of real and permanent value.

Recommendation No. 5. Committee on Federation.

Federation has been one of the most widely discussed topics of the year in meetings of the various pharmaceutical organizations. When the views of the proponents and opponents are critically studied it will be seen that it is the name rather than the idea which is the principal stumbling block. The com-

prehensive plan of federation which was promulgated by President Dohme does not seem probable of adoption as soon as was anticipated. The best way to accomplish a task of such magnitude is to first get together upon the points on which there is no disagreement. Your Committee on Federation, under the able leadership of Chairman Arny, has taken for the initial subject "Coöperative Publicity in American Pharmacy." It is believed that there will not be a dissenting voice in the vote to inaugurate a working plan on this subject and it is felt that a beginning has at last been made in attacking this most difficult problem. I recommend that the Committee on Federation be continued as a working committee of the Association and that Chairman Arny be continued as its head and that he be given authority to select his associates for the ensuing year.

The plan of offering a concession to State associations based upon a hundred percent membership affiliation does not seem to be practical, but there must be some plan based upon this thought which is capable of being developed and which will ultimately unite the memberships of the State Pharmaceutical associations with our own. When that has been accomplished, we shall have effected a federation which will have a tremendous influence in shaping the pharmaceutical progress of the future.

The National Drug Trade Conference continues to be worthy of our commendation and support. Limited as it is in its effectiveness by the fact that its members cannot act for their respective organizations quickly in cases of emergency, it nevertheless is a successful experiment of its kind and is one of the strongest evidences of the need of that real federation for which many of us hope and which all of us will undoubtedly see.

One of the memorable events of this year's meeting will be the presentation of the first Joseph P. Remington honor medal to be awarded. This medal, which is to be awarded annually to a prominent pharmacist for distinguished services performed during the preceding year, originated in and is presented by the New York Branch under conditions approved by the Council of the Association. A fact which will add distinction to this occasion is that the recipient is one of our own ex-presidents, whose services to Pharmacy have been noteworthy for many years past. Established in honor of one of America's greatest pharmacists, it is believed that in time the distinction which attaches to this honor will be as great as that of the Hanbury Medal of the British allied scientific bodies.

Our Association is fortunate in its close affiliation with the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy. Both of these organizations are pioneers and leaders in their respective fields and the benefits which are derived by the coincidence of our meetings cannot be over-estimated. A correlation must necessarily exist between education, legislation and practice. No permanent or healthy improvement can be made except it is shared proportionately between these three elements of progress. Each must keep pace with the others. If one assumes a dominant attitude, it does so to its own prejudice and to the detriment of pharmacy. More is likely to be lost than gained through radical changes which set up antagonism and opposition that destroy where it is intended to create. Let us foster a spirit of coördination and coöperation. Let us try to be tolerant and wise and let us subordinate personal preferences and advantages for the larger and more generous

viewpoint which recognizes that pharmacy is not decadent and that its possibilities were never greater than at present.

By the time the four years have elapsed which will see all of the leading colleges with a full high school entrance requirement, I believe that many of the present evils and obstacles to professional progress will have disappeared by a natural and healthy process of elimination. One of the signs of the times in this respect is the number of States which are added each year to the list of those possessing graduation prerequisite laws.

Recommendation No. 6. Hospital Pharmacists.

One of the most important phases of pharmaceutical practice is that of hospital pharmacy. It would seem just as necessary to provide laws for the proper handling and dispensing of drugs in hospitals as for the practice of pharmacy to the public. Few states have laws or regulations affecting pharmacy as practiced in hospitals. I therefore recommend that the National Association of Boards of Pharmacy and the House of Delegates have this fact brought to their attention and that they be requested to take up this subject for discussion with the view of formulating regulations or enacting legislation covering the practice of pharmacy in hospitals in the various states.

The practice of pharmacy has, during recent years, come to be more and more hampered by governmental regulations. The modern pharmacist needs the frequent services of an expert accountant and a legal adviser to enable him to avoid the pitfalls of non-compliance with arbitrary technical and often unnecessary regulations and rulings imposed upon him by those who have little sympathy with and less knowledge of his professional responsibilities and difficulties than they should. Be it to the everlasting credit of pharmacy that it has frequently led and always acquiesced in reforms which are for the real and ultimate benefit of he public, even though financial loss is incurred thereby. The history of anti-narcotic legislation bears tribute to this fact and the more recent coöperation with the regulations of the Public Health Service regarding venereal diseases is an added proof of the readiness with which private gain is subordinated to the public welfare.

One of the tests of the profession is yet to come through the changes arising from prohibition legislation. In some quarters, a form of hysteria seems to have developed for fear pharmacists will be tempted to violate the prohibition laws. Probably some will, just as they always have in the past, but under the present rules it will always be with the connivance and collaboration of a physician, and why any more discredit should attach to pharmacy for the few who are unworthy of the calling than to medicine for the same reason is hard to understand. If added responsibilities should come to pharmacists, and they no doubt will through the issuance of rules and regulations in respect to both alcoholic liquors and narcotics (for both now seem to be on the same plane of discredit), they should be accepted as a tribute to the dignity and responsibility of the calling and as a recognition of the honesty and worthiness of the profession as a whole which is implied by such a trust.

Compulsory health insurance does not seem to be making the progress in this country that its sponsors hoped and its opponents feared. Theoretically it is admirable. Practically, it is a breeder of mendaciousness, malingering and mis-

representation. Before such laws are passed we should have a strengthening of our health, sanitation and housing laws and a proper enforcement thereof. Pharmacists should encourage legislation which tends to develop and maintain good health and should continue to oppose compulsory health insurance legislation which would not only increase tremendously our burden of taxation but which thus far has failed to accomplish its object in every country where it has been tried.

Recommendation No. 7. U. S. P. delegates.

The decennial United States Pharmacopoeial Convention will be held in May of next year in Washington. The American Pharmaceutical Association has both as an association and through its individual members been a prominent factor in pharmacopoeial revision in the past. In view of the importance of this organization being properly represented by delegates who will attend the Convention and who would be eminently suitable for service on the new Committee of Revision, I recommend that the incoming president be requested to appoint as delegates only those who fulfil these requirements and who are not appointed as delegates from any other organizations. It has sometimes happened that persons were appointed who also held credentials from other organizations while equally good men were debarred from service on the Revision Committee by not receiving any appointment at all.

The Fourth Edition of the National Formulary has continued to merit the approval of those who have taken advantage of the wealth of practical material which it contains. The Committee of our Association upon which is placed the responsibility of conducting the next revision should lose no time in getting to work in the near future so that the issuance of the N. F. V may be synchronized with that of the U. S. P. X.

Pharmaceutical service of a praiseworthy type has been rendered by thousands of members of our profession in the two years of the existence of our augmented military and naval forces. In the Navy, through the medium of the Naval Hospital Corps, opportunity was afforded for pharmacists to gain commissioned rank, which hundreds of them have done. In the Army, the policy has been consistently antagonistic to any recognition of pharmacy and the bill which was introduced to establish a pharmaceutical corps remained in committee. There seems to be no reason why pharmacists who are properly qualified should not be given commissions except the unwillingness on the part of the military authorities to make the necessary departmental changes. No one who is conversant with the true situation during the summer and autumn of 1918 gives credence to the statements that were published that it was because pharmacy was unworthy of recognition.

Recommendation No. 8. Commissioned rank for Army Pharmacists.

There is no doubt whatever that a pharmaceutical corps should, can and will be established. Whether it will be through the passage of a bill forcing it upon the Surgeon General's Department, or whether the proper and better way is to seek its establishment through coöperation of that Department by means of conferences and discussions, remains to be seen. It is probable that the latter plan will bring about the most satisfactory results and I recommend that the American Pharmaceutical Association again place itself on record as favoring the

recognition of properly qualified pharmacists by elevation to commissioned rank, in a corps or body affording an opportunity for distinctive service, and that the officers of the A. Ph. A. be directed to coöperate fully with all other organizations having the same object in view.

Recommendation No. 9. Naval Pharmacists.

I also recommend the endorsement of the Darrow Naval Bill providing for the improvement of the status of naval pharmacists.

Recommendation No. 10. Nominations.

One of the weakest points in our constructive work is our method of making nominations. I have studied carefully the systems in use in other similar organizations and have conducted much correspondence to ascertain how other plans work out in practice. No method of which I have learned seems to be free from imperfections. I am, therefore, not prepared to make any suggestion embodying a radical change. I do feel, however, that a more representative list of names might be obtained if the local branches were given an opportunity to voice their feelings in the matter. I therefore recommend that the secretary of this organization be instructed to send a communication in February or March of each year to the Secretary of each local branch asking for a list of not more than five names of members who are worthy of honor and distinction at the hands of the parent Association by being nominated for office. These names, after being received by the General Secretary, should be compiled alphabetically and the list mimeographed so that each member of the General Nomination Committee may be furnished with a copy at the initial meeting of that body. Such a list will serve as a valuable guide for the final selection of nominees whose names are to be recommended to the Association for ballot.

Recommendation No. 11. Nominations.

I also recommend that on this informative list and also on the final balloting slip of nominees, the occupation of the nominee be given as well as his place of residence. In this way the members may be enabled to make a more intelligent selection than by the procedure in use at present, in which it is assumed that this knowledge is possessed by those voting.

In an organization which has evolved under the peculiar difficulties which have attended the growth of the American Pharmaceutical Association there is to be expected an unwieldiness in certain directions and a failure to properly coördinate to the best interests of the work. This has partly been brought about by the growth of the Council from a small, compact governing body to a large body in which there seems to be a great deal of lost motion, probably due to the necessity of conducting all business by correspondence. When only a small group of persons is involved, correspondence is not such a bad method of getting results, although it is much less satisfactory than personal meetings. As the number increases, however, the efficiency decreases in inverse ratio.

Recommendation No. 12. Executive Committee of Council.

I therefore recommend that there be constituted an executive committee of the Council consisting of not more than ten members (including the elective officers of the Association) which shall be elected by the Council by ballot at its first session and to which shall be referred such matters as the Council may determine in the interests of expediency and efficiency.

Recommendation No. 13. Forgotten recommendations.

I also recommend that the first duty of the incoming Council shall be to refer to this Executive Committee the presidential addresses for the past ten years with directions to take such steps as will result in the carrying out of many recommendations which have been approved and then entirely disregarded or forgotten. This shall not apply, however, to such recommendations as are no longer pertinent or of present importance and value.

I feel that this is one of the most important suggestions that I have to make, for as I have studied the presidential addresses of past years and seen the ready acquiescence with which the Association endorsed recommendations involving much careful study and thought, and the almost equal ease with which these same important actions seem to be forgotten, I have been surprised at the large number of matters of importance that seemingly have been neglected. I therefore propose this, not so much in the interest of my own recommendations as for the sake of the good material that has been lying dormant and for the sake of the future.

Death has laid his heavy hand upon our membership list during the past year as usual. There is little that we can do or say that can add to the lustre of the names of those who were eminent, and we know that for the rest they know not nor care what we may do, having solved all mysteries and attained all knowledge.

Recommendation No. 14. Honoring of members who have died during the year.

That we may show ourselves not unmindful of their loss, I recommend that a suitable time be set aside by the General Secretary at one of the future sessions of this meeting at which an opportunity may be afforded to either speak of the departed or pay them the equally eloquent tribute of devout silence as their names are read.

I should be unmindful of my obligations did I not take this opportunity to express my appreciation to the permanent officers of the Association, and to the section officers, for the helpfulness which each has shown to make this year's work a success. As I relinquish the gavel, the emblem of my office, I shall do so with the feeling that perhaps I have benefited more than has the Association. The year's service has brought to me many new friends, it has renewed my faith in pharmacy and my appreciation of the fact that this ancient and honorable organization is one which has helped to keep alive the spark of scientific interest which in time will kindle the torch to light the path of future generations of pharmacists toward the land of professionalism, whither we are all journeying. And if any bedlamite or evil disposed person shall ask us mockingly as we journey on our way "What is it that ye seek?" let us answer in all sincerity "We seek truth."

REPORT OF THE COMMITTEE ON THE PRESIDENT'S ADDRESS.

To the Members of the American Pharmaceutical Association:

The Committee on the President's Address has given careful consideration to the excellent recommendations contained in it. We believe that President LaWall and the Association are to be congratulated on the sane, constructive character of the address and the sound common sense shown in the recommendations. The Committee does not differ from the President on any of the principles involved in the recommendations, and its work has been almost entirely aimed at perfecting the suggestions made.

(The recommendations were considered seriatim by the Association, and the action thereon, for convenience and information, is inserted in brackets in the report.—EDITOR.)

Recommendation No. 1 is recommended for adoption, it being understood that the proposed revised code shall be finally approved by the Association.

(Approved.)

Recommendation No. 2 is recommended for adoption, it being understood that the proposed referendum shall be conducted in compliance with the provisions of the Association for amending the By-Laws.

(This recommendation was approved by the Association. In a later action by the Association, with the approval of the President and the Committee, this subject was referred to the Executive Committee of the Council.)

Relative to Recommendation No. 3, the Committee has decided that it is too soon to again change the organization of the House of Delegates and its procedure, and that some of the proposed changes would not be practicable; therefore the recommendation is not recommended for adoption.

(The Association approved the action of the Committee.)

Recommendation No. 4 is recommended for adoption.

(Approved.)

Recommendation No. 5 is recommended for adoption.

(The recommendation, owing to the action by the Committee on Federation,* was withdrawn by President LaWall.)

Recommendations 6, 7, 8 and 9 are recommended for adoption.

(Approved.)

The Committee agrees with the President that the present method of making nominations is far from perfect, but does not agree that the slight modification proposed will effect any great improvement; therefore Recommendation No. 10 is not recommended for adoption.

(The Association voted to refer the question to a special committee of three to investigate our method of nominating and voting and report a plan whereby the system may be improved. This committee is to be appointed by the incoming President.)

That part of Recommendation No. 11 which would require that the vocation of the nominees shall appear with their names and addresses on the ballots and in electing officers is recommended for adoption.

(The Association approved the report of the Committee.)

Recommendation No. 12 is recommended for adoption, with the change that the proposed Executive Committee of the Council shall include the President of the Association and the Chairman of the Council, instead of the elective officers of the Association.

(The report of the Committee was approved.)

Recommendations 13 and 14 are recommended for adoption.

(Approved.)

Signed, T. J. BRADLEY, Chairman,
G. M. BERINGER,
L. C. HOPP,
R. S. LEHMAN,
R. A. LYMAN,
Committee.

(The report of the Committee, as amended, was then adopted as a whole.)

AWARD OF THE JOSEPH P. REMINGTON HONOR MEDAL.

President Charles H. LaWall, in reconvening the First General Session of the Sixty-seventh Annual Meeting of the American Pharmaceutical Association, Tuesday evening, August 26, 1919, said:

"We are assembled for a purpose in which we are all glad to participate, the occasion of the first presentation of the Joseph P. Remington Honor Medal,

* These transactions, whereby a Pharmaceutical Publicity Committee is to be created, will be reported in a succeeding issue of the JOURNAL.

which is to be awarded to one of the distinguished Ex-Presidents of the American Pharmaceutical Association."

He then introduced Prof. Jacob Diner, who spoke in part as follows:

Mr. President, Ladies and Gentlemen:

Many years ago when I was still a tyro, really an embryo so to speak, in pharmacy over yonder where recently the world war waged, there came to us in Europe the renown of a man from the wilderness of America, a land which we saw in our vision peopled with Indians and where the white man's path was fraught with danger and difficulties; yet from this land there came to us the name and fame of a pioneer in pharmacy, Joseph Price Remington.

His renown, due to the pioneer work in pharmacy, reached us and left a deep impression upon us young men sitting on the benches and imbibing the lore of pharmacy. It was far from my mind that the hour would ever come when upon me would devolve the honor and the pleasure of being the first one to present the Joseph P. Remington Honor Medal on these shores.

THE JOSEPH P. REMINGTON HONOR MEDAL

Some twenty odd years ago, at one of our State Pharmaceutical Association meetings, I found myself, during an excursion given by the Association, making feeble efforts to land the elusive fish in the waters of the St. Lawrence River, when a kindly gentleman fishing alongside of me said, "Boy, let me show you how to bait your hook." He did so, and to my great surprise, astonishment and pleasure, I landed a fish. We became somewhat acquainted, and I dropped the first prize that I ever won in my life, and I think the last one, when I learned that this illustrious fisherman was no less a man than Joseph P. Remington. Somehow or other it seems to me that my life and path were more or less interwoven with his from that time, and of course like most of you I learned to know and, like everyone of us, to love Joseph P. Remington while he was alive, and to honor his memory now that he is gone from us.

The honor of this presentation has come to me as an Ex-President of the New York Branch of the American Pharmaceutical Association, and under these circumstances it is certainly a pleasure to have been a senior and to have the honor of presenting this medal.

Now a word or two so that we may thoroughly understand the method of awarding the medal and the more appreciate the value of the man who is to receive it. The objects of the medal, of course, are well known to you. One is to perpetuate, if that were necessary at all, but to perpetuate in a befitting manner the memory of the late Joseph P. Remington, and the other is to do it by awarding the medal to a man who during the preceding year has done something worth while to advance pharmacy in any or many of its branches.

The award is made, or the choice is made, by having each of the living past presidents of the American Pharmaceutical Association nominate by mail someone whom he thinks worthy of receiving this distinction, and enlarging upon the reasons for his choice. From these nominees, the three names receiving the highest number of votes are again submitted to the past presidents, and from these the one receiving the highest number of votes receives the medal.

You can see therefore that the recipient must have merit, must have done something to enthuse a large number of these older men, who are careful in their choice and in their selection, accustomed to deliberation and fully aware of the importance of the American Pharmaceutical Association and the importance of it to pharmacy; such nomination and selection places the award only within the reach of those who have merit and have won true, honest distinction. Thus we find ourselves here tonight to present this medal for the first time.

James H. Beal, educator, scientist, writer, diplomat, legislator, upon you has fallen the choice, the selection, the dictum of these wise and careful men, to be the recipient of this distinction, and in honoring you by presenting you this Medal, I feel that I express the sentiments of every one present, that the New York Branch of the American Pharmaceutical Association unites with me in the declaration that in honoring you we honor ourselves, and we honor the Association. May you live long to continue your useful work on behalf of pharmacy, to be the adviser and helper and friend of pharmacy as you have been in the past. Mr. Beal, I congratulate you, and I congratulate the members who so wisely chose."

ADDRESS OF JAMES HARTLEY BEAL, MEDALIST.

Mr. President, Members of the New York Branch, Ladies and Gentlemen:

When I compare my own few and feeble efforts in behalf of pharmacy with the substantial achievements of so many faithful and deserving members of this Association I cannot help but wonder, as perhaps some of you have wondered, why I should have been selected to receive the first Remington medal.

However we may view the action of the committee in this particular instance, no one will question the wisdom or the laudable enterprise of the New York Branch of the American Pharmaceutical Association in establishing the means of commemorating the eminent services of one who for so many years filled so large a place in American pharmacy, both in name and in fact, as did Professor Joseph Price Remington.

When I became a member of the Association many years ago, Professor Remington was one of the first to extend the hand of professional fellowship, and from the day of that first acquaintance until the last his sympathetic advice and encouragement were unfailing. This was typical of his behavior to many other young and timid members who will always gratefully remember his approachableness, his efforts to make them feel at home at the annual meetings and to interest and encourage them in association work.

To you who knew him so well little could be said that would add to your knowledge of his personal characteristics. You still have a keen recollection of his vigorous personality, of his constant zeal in advancing the interests of this Association, of his readiness in debate, of his wisdom in counsel, and of his uniform courtesy and unfailing good humor.

Professor Remington's professional experience bridged the space between two distinct periods of pharmaceutical development. When he began his apprenticeship the apothecary, as he was then commonly called, was the principal manufacturer as well as the purveyor of medical supplies. The mineral acids and salts and most of the medicinal chemicals were purchased ready-made, but the galenicals which then ruled in the world of medicine were almost uniformly manufactured in the same establishment that dispensed them. He lived to see the period when the apothecary ceased to be the principal producer of medicinal compounds and became mainly the purveyor of preparations manufactured by others, and when the medicinal agents in most common use assumed a character that required for their successful production the resources of establishments maintained by large aggregations of capital and employing large numbers of specially trained workers.

To those who knew him intimately it was evident that although Professor Remington did not welcome the passing of the manufacturing functions of the apothecary to the large laboratory, he at length came to realize that such a change was inevitable, that it was but a natural step in the process of social evolution, and that the logical action of the apothecary was not to resist that which he could neither prevent nor change, but to readjust himself to the new conditions.

To some people optimism consists in refusing to see unwelcome facts, or in denying their existence when they are forced upon their attention. Professor Remington's optimism was of a different sort. He frankly recognized the changes that had come to pharmacy, but he had an abiding faith in its future, and in the opening of new fields of usefulness that would always require the best efforts of the best trained minds.

The historical development of a human vocation in many respects resembles the development of a river bed. Within certain rather narrow limits the stream determines its own channel; it may dig away the bank at one place and deposit a bar or build up to a point at another, but its volume of flow, its principal characters and general direction will be determined by the nature of the water-shed, by the general topography, and by other natural factors which no action of the current can control or modify. In a similar manner the members of a trade or profession are limited largely to the control of the collateral and incidental features of its development. By conscious thought and coöperation certain minor phases can be emphasized, restrained or reformed, but the general trend of its evolution will be determined by the fundamental features of the society and civilization which it serves, and by other factors beyond direction and control regardless of whether the direction of such evolution be in accordance with the ideals of its teachers and philosophers or opposed to them.

It is a common characteristic of men to cling to their early ideals for the progress of the particular calling with which they have been associated, and to feel that it will lose in power and dignity if the direction of its development chances to be along different lines than those previously marked out for it, overlooking the historical fact that the evolution of an art or a science according to preconceived ideals has been the exception rather than the rule; and also forgetting that each successive stage of development in every human vocation has brought with it opportunities for the best efforts of the best trained men and the basis for the formulation of new ideals as much worth while, or perhaps even more worth while, than the ideals that have been discarded.

After all, what is the proper measure by which to determine the correctness of professional ideals? Is not the true standard that of service, and service alone? Is not the truest and the most worth while development of an art that which brings the greatest good and the greatest service to the greatest number?

If the old method of local and individual production furnished more efficient medicinal agents than the new, then we are justified in regretting the change in the methods of production and distribution; but if the transfer of productive functions from the individual apothecary to the manufacturing laboratory has resulted in increasing the efficiency of medicinal agents, or has enlarged the extent of our control over disease, then we have no alternative but to acquiesce in the transfer, and to readjust our ideas and ideals to make them fit the new conditions.

It is not true that pharmacy has failed to progress in accordance with the spirit of the age. The improvement in the quality of its products and in the methods of their production has been as great as the improvement in any other line of productive manufacture. It is only the external form, not the substance of pharmacy, that has altered.

We must get away from the pessimistic idea that pharmacy is not pharmacy unless it is carried on in small establishments where two or three individual workers produce and dispense medicaments to a limited clientele in a small locality. The workers in the large laboratories who contribute to the improve ment of thera-

peutic agents or who are engaged in their production on a large scale are as truly entitled to be called pharmacists as if each of the individual workers expended his entire activities behind the dispensing desk or in the back room laboratory of a small retail store.

Examined without prejudice the frequently deplored commercialization of pharmacy can be interpreted as the beginning of the separation of its merchandising features from its purely professional features. It is a part of the natural process of evolution; a first step toward a more complete specialization of functions. Its tendency is towards the same end as that sought by those who advocate legislation to create two classes of pharmacies, one class to be purely commercial, the other purely professional. We can retard the rate of this beginning cleavage between commercial and professional functions by demanding that every pharmacy shall particularly concern itself with the production and standardization of medicinal agents and the compounding of physicians' prescriptions, or we can materially advance its progress by frankly acknowledging the right of commercial pharmacy to a separate and independent existence.

The total amount of real pharmaceutical service required by the public and the medical profession is insignificant as compared with the number of existing drug stores, whereas its division among a smaller number of establishments would give a substantial portion to each and would encourage the cultivation of such work as a specialty.

It may be too early to ask for legislation dividing pharmacies into different classes according to the character of the patronage they seek, but it ought not to be too early to encourage the progress of such a separation through voluntary action on the part of their proprietors.

He must indeed be pessimistic who cannot see in present conditions the promise of a prosperous future for pharmacy. If all other signs were lacking, the fact that for years the demand for the graduates of our colleges and university schools of pharmacy has been far greater than the supply, and that the call for still better trained men is ever increasing, should be evidence enough to convince the unbiased mind that pharmacy is not decadent.

Though it is true that hitherto the majority of the better trained graduates have been absorbed by the large laboratories, this is because the demand there has been most insistent. When this demand has been more nearly satisfied, we may reasonably expect to see an increasing number of establishments where the compounding of prescriptions, the making of laboratory examinations required by the physician, and the other so-called professional features of pharmacy, will be cultivated as specialties.

By some Professor Remington would probably have been denominated an opportunist, owing to the fact that at times he seemed to endorse policies which, externally at least, appeared to be inconsistent with each other. Those who were more intimately associated with him came at length to realize that he was a man of remarkable tenacity of purpose; that however much he might seem to yield in matters of detail the central thought and idea of his purpose was never lost sight of. Like a skillful commander he knew that campaigns are rarely completely carried out as planned, and that the details of their execution must be varied to meet the changing exigencies of the situation to make the central purpose of the general plan come true.

In other words, he was more intent upon final results than upon the forms or formulas by which they were obtained, and his tenacity was for things of substance rather than for mere names or for theoretical consistency. If he could meet a prejudice or lessen opposition to his general purpose by the sacrifice of some non-essential detail, or by a change of name to suit some stickler for form and method, he never hesitated to yield the point and to come to an accommodation. Not infrequently those who contested an important matter with him, later had reason to realize that although they had gained liberal concessions in the way of empty

forms and minor details, Professor Remington had gained practically every substantial point involved in the contest.

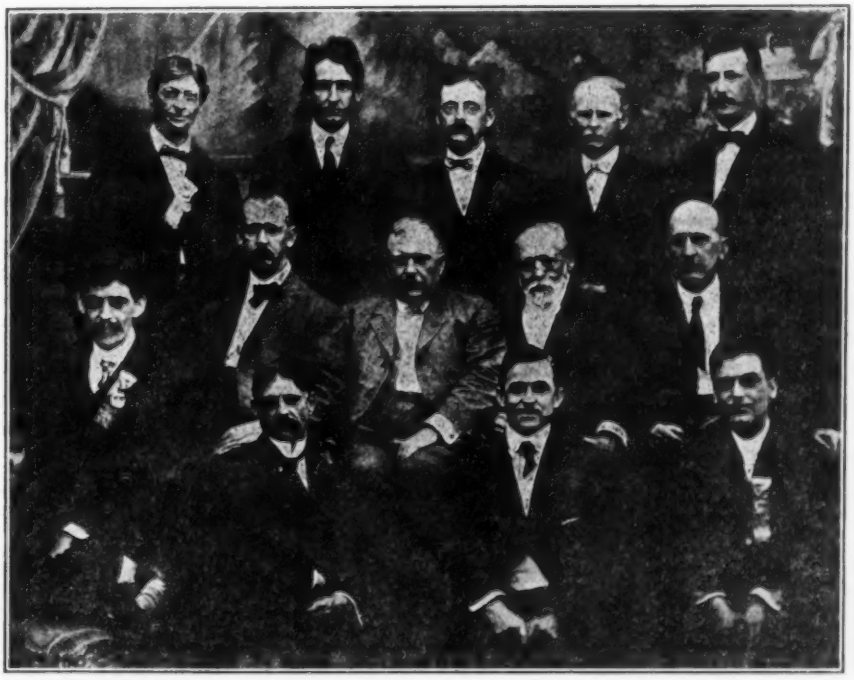
It was this diplomatic disposition to yield in non-essentials in order to accomplish matters of larger consequence that enabled him to act so successfully as moderator between antagonistic views and personalities, where without such diplomatic mediation only confusion and disagreement could have resulted.

Professor Remington's position in pharmacy was not fortuitous nor was it thrust upon him by circumstance. Men do not achieve such a position of leadership as he so long enjoyed, nor continuously fill so many important and conspicuous positions, without the possession of unusual qualities of mind and character.

Even those who were occasionally forced by circumstances into positions of antagonism that sometimes verged upon bitterness will be most ready to admit his large and liberal qualities of mind and heart. In all the essential qualities of manhood he was sound and vigorous, clean alike in thought and habit, and with a personality and character that justly entitle him to rank as one of the very foremost men of the profession which he so long adorned.

Doubtless, like all men of action, he was at times responsible for decisions or policies that his own reason would not have endorsed at a later date, but even those most frequently at variance with him will concede that, weighed in any balance, his worth as a man and the value of his services to the American Pharmaceutical Association and to American pharmacy will far exceed the sum of any human frailties or errors of judgment that a critical examination of his life and character might bring to light.

No words at my command can adequately express my appreciation of the honor of having been selected as the first Remington medalist. I can only assure you that I am very deeply sensible of the distinction which you have conferred.



COMMITTEE ON NATIONAL FORMULARY, HOT SPRINGS, ARK., SEPTEMBER 3–7, 1908.

Seated left to right in front row: H. V. Arny, H. A. B. Dunning, Leonard A. Seltzer; second row, Martin I. Wilbert, Wilbur L. Scoville, C. S. N. Hallberg, C. Lewis Diehl, Henry P. Hynson; standing, Leo Eliel, Charles H. LaWall, George M. Beringer, A. B. Stevens (Honorary President A. Ph. A., 1919–1920), Joseph W. England.

FINAL REPORT ON THE ALKALOIDS OF GELSEMIUM.*

BY L. E. SAYRE AND G. N. WATSON.

For many years contributions have been offered and published in the Proceedings of this Association by the author and others from the University laboratory upon the subject of the active constituents of Gelsemium.[1] Each one of these investigations has progressively added some new information tending toward solving the problem of separating the various active constituents of the drug. The difficulty involved in the isolation or separation of these constituents has been due largely to the fact that the peculiar intractable resin-like body (a resinoid differing from the ordinary members of its class) permeates the extractive (or alkaloidal) substances which is difficult to separate from the latter without losing these alkaloidal constituents or masking them in a way that leads one to the conclusion of former investigators, that some of these active principles are uncrystallizable.

One of the most noteworthy investigations contributing much to the constitution of the extractives of Gelsemium was that of Charles Watson Moore, published in the *Transactions of the English Chemical Society*, 1910, Volume 97. But this author failed, like others, to separate the component parts of the so-called uncrystallizable material of Thompson, which, the latter author named "Gelseminine."[2] The facts revealed by our investigation seem to show that there does not exist in the drug any such alkaloid as Gelseminine, but that this constituent (so-called) is a compound body consisting of several alkaloids having different properties, as we will attempt to show.

In this report the authors desire to give such details of the separation of the various constituents that others, following same, may be assured of successful results in such separation of Gelsemium active principles. It is hoped it will be a guide to manufacturers who wish to isolate any or all of the principles for the market. The process of isolation will throw some light upon a method of standardization of the drug, which will be the subject of another paper by our colleague, Professor L. D. Havenhill.

SEPARATION OF SEMPERVIRINE (AS NITRATE).

Twenty-five pounds of the drug in No. 20 powder were completely extracted with 70 percent alcohol by re-percolation. The alcohol was distilled off on a water bath. The concentrate, made alkaline with ammonia, was extracted with large excess of chloroform (5 washings) until free from alkaloid. The chloroform extract (washing) was concentrated by distillation on a water bath. The evaporated chlororoformic concentrate was extracted with 0.5 percent hydrochloric acid. The acid solution, containing the alkaloidal hydrochloride was treated with a saturated solution of sodium nitrate (5 mils per 100 mils of acid solution) which resulted in

* Read before Scientific Section, A. Ph. A., New York Meeting, 1919.

[1] Assay of F. E. Gelsemium, Proc. A. Ph. A., 1907, p. 357. A further Study of the Alkaloids of Gelsemium, A. Ph. A. meeting at Hot Springs, Arkansas, Sept. 7–12, 1908. "A Study of the Alkaloids Gelsemine and Gelseminine," Proc. A. Ph. A., 1909. Gelsemium, A. Ph. A., Richmond, Virginia, 1910. "The Composition of Gelseminine," A. Ph. A., Journal, May, 1912. "Further Study of the Alkaloid Gelseminine," A. Ph. A. Journal, March, 1914. "Sempervirine from Gelsemium Root," A. Ph. A. Journal, 1915. "Third Alkaloid from Gelsemium," A. Ph. A. Journal, 1915.

[2] Pharmaceutical Era, 1887, p. 3.

the precipitation of sempervirine nitrate (an alkaloid previously reported). The sempervirine nitrate was separated by filtration, dissolved in hot water and reprecipitated with sodium nitrate. The latter process was twice repeated. The resulting sempervirine nitrate was first washed with water containing sodium nitrate, then with water, small amount (process repeated twice). The salt was then dried and dissolved in hot alcohol and set aside to crystallize from alcoholic solution. About 3 grammes of a somewhat bulky sempervirine nitrate were thus obtained.

REMOVAL OF GELSEMIC ACID.

The acid filtrate from the sempervirine nitrate (representing organic—gelsemic acid—alkaloidal salts, etc.) was extracted with chloroform, the solution before washing being somewhat concentrated and only partly neutralized. This chloroform washing removed gelsemic acid.

SEPARATION OF GELSEMINE.

The above acid solution of the alkaloids was then made alkaline with NH_4OH and extracted, first with ether (3 washings) to remove gelsemine and then with chloroform (3 washings) to remove other alkaloids soluble in chloroform.

The ether extract was concentrated and precipitated in ether solution by means of HCl gas as an impure gelsemine hydrochloride.

The impure gelsemine hydrochloride was dissolved in water. The greater part of the water was evaporated spontaneously, filtered and the residue washed with strong alcohol until colorless. By this method of purification all possible traces of gelsemic acid and the hydrochlorides of other alkaloids were removed leaving the pure white gelsemine hydrochloride. Both the aqueous and alcoholic filtrates were further concentrated and treated in order to remove all alkaloidal material, gelsemine hydrochloride and the hydrochlorides of associated alkaloids.

About 8 grammes of gelsemine hydrochloride were obtained.

EXTRACTION OF REMAINING ALKALOIDS.

The chloroformic solution of alkaloids after extraction of the gelsemine was concentrated by distillation to a soft brown, amorphous extract representing the remaining total alkaloids, *i. e.*, the total alkaloids minus the gelsemine and sempervirine.

This extract was dried, dissolved in the least possible amount of absolute alcohol in a glass stoppered flask, the alcoholic solution treated with hydrochloric acid gas and then with a large excess of absolute ether. The mixture was allowed to stand 24 hours and then filtered. The precipitate of hydrochlorides of the so-called amorphous alkaloids was washed with chloroform, which dissolved an amorphous portion and left on the filter a brown, heavy, granular, crystalline, extremely soluble, hydrochloride of an alkaloid (weighing 1.75 grammes), for which we suggest the name "Gelsemidine"—not "Gelseminine"—since gelseminine, the name formerly given to the amorphous alkaloids of gelsemium, has been proved conclusively to be not a single alkaloid but a mixture of three alkaloids, one of which is crystalline, one capable of forming a crystalline salt and one distinctly amorphous and possibly colloidal.

Weight of Gelsemidine hydrochloride, about 2.5 grammes.

The chloroform-soluble portion of the mixture of hydrochlorides was of a light brown color and amorphous when first precipitated, but soon passed into a

dark brown mass having a resinous appearance. This residue was strongly alkaloidal and in appearance and behavior is very much like Lloyd's Emetoidine, said to be a colloidal alkaloid of Ipecac, and might be very appropriately called "Gelsemoidine."

In order to secure the total gelsemic acid (not important to this investigation) the original chloroform extract was concentrated to a syrupy extract and washed with hot water to remove gelsemic acid which was purified by repeated concentrations and filtrations and finally crystallized from alcohol.

PHYSICAL DESCRIPTION.

Gelsemine.—Gelsemine is the most abundant and only ether-soluble alkaloid of Gelsemium. Its ether residue is a reddish, amorphous mass having a resinous appearance. Its hydrochloride is pure white, crystalline, soluble in water and difficultly soluble in alcohol. The fact that the alkaloid is soluble in ether and its hydrochloride almost insoluble in alcohol makes its separation from the other alkaloids and its final purification very efficient. The aqueous solutions of its salts are precipitated by the general alkaloidal reagents.

Sempervirine.—The free alkaloid crystallizes from chloroform in reddish brown needles. It is slightly soluble in alcohol and water and almost insoluble in ether, benzol and petroleum ether. Its hydrochloride is readily soluble in water and alcohol and is precipitated by nitric, tannic and picric acids; by potassium chromate, platinic chloride, sodium chloride and sodium nitrate giving yellow precipitates. The nitrate is somewhat soluble in water, very soluble in hot water and in hot alcohol. Their solutions give precipitates with Wagner's and Mayer's reagents.

Gelsemidine is an amorphous alkaloid, insoluble in ether, soluble in chloroform and alcohol. Its hydrochloride is insoluble in ether and chloroform, soluble in alcohol and extremely soluble in water. Its crystalline form is granular; its action, purely sedative. Like sempervirine, gelsemidine exists in gelsemium in very small quantity.

COLOR REACTIONS WITH SULPHURIC ACID AND MANGANESE DIOXIDE.

Gelsemidine (hydrochloride)	Purple, bluish green
Gelsemoidine (hydrochloride)	Purple, green
Sempervirine (nitrate)	Green, yellowish green
Gelsemine (hydrochloride)	Crimson, green, yellowish

PHYSIOLOGICAL ACTION OF THE ALKALOIDS OF GELSEMIUM ON FROGS.

Alkaloid.	Respiration.	Behavior.	Paralysis.
Gelsemine Hydrochloride	Slow, irregular 30 per 22–30 sec.	Restless, convulsions	Slight
Sempervirine Nitrate	Slow, irregular 30 per 27–30 sec.	Restless, convulsions	None
Gelsemidine Hydrochloride	Nearly normal, regular 30 per 16–19 sec.	Quiet	Decided
Gelsemoidine Hydrochloride	Normal	Quiet	Present

Physiological study to be continued.

Gelsemoidine is amorphous, insoluble or nearly insoluble in ether, soluble in alcohol, soluble in chloroform and in water. It does not form crystalline salts.

Its hydrochloride is soluble in the same solvents and is hygroscopic. Like sempervirine and gelsemidine, it is in small quantity. It is separated from the ammonia-soluble, resinous matter (once thought to be alkaloid) by means of water or acidulated water in which it is soluble.

As above stated, it is believed that this investigation will aid in the determination of a satisfactory process for the standardization of the drug and its preparations. Conjointly with this work Professor L. D. Havenhill is working out such a process of standardization.

The authors would like to add a word with regard to the importance of our understanding the chemical constitution of such a drug as Gelsemium, as this drug is one that powerfully impresses the nervous system. It is said that small medicinal doses relax the muscles and allay nervous irritation. Therapeutically, Gelsemium is said to act upon the cerebrospinal nervous centers and it has found much favor among the eclectic practitioners who claim that the drug "possesses a perfect control over the nervous system, removing nervous irritability more completely than any other known agent."

Since the habit-producing drugs (of the narcotic and hypnotic group) have caused much alarm, evidenced by legislation, it is wise for chemists and therapeutists to endeavor, as far as possible, to employ a substitute. It is believed that if the drug in question is more thoroughly studied by therapeutists it will be found more valuable, than it is deemed at present, as one of the important agents in the armamentarium of the practitioner.

THE PERMANENCY AND DETERIORATION OF SOME VEGETABLE DRUGS TWENTY-FIVE YEARS OF AGE.*

BY E. N. GATHERCOAL.

Some two years ago opportunity offered for the examination of a collection of crude drugs that had been prepared some twenty-five years ago by W. K. Higley of Northwestern University School of Pharmacy, Chicago. These drugs were placed in glass-stoppered bottles kept in cases more or less exposed to the light. For a number of years, at least, none of the bottles have been opened. While the conditions under which these drugs have been kept are not exactly similar to the conditions met with in drug stores, in many respects they are similar to those in stores where crude drugs are kept in glass. Of course, where drugs are kept in wooden drawers or boxes, or in paper packages, the liability to deterioration is perhaps increased.

This paper is deficient in some respects. It will be noted that a number of assayable drugs have not been assayed. This was due in some cases to an insufficiency of material, in others to lack of time on the part of the author. Despite the fact that spare moments for two years have been devoted to this work, many of the drugs have not received nearly the attention they should have had.

A number of important drugs are omitted because samples of them were not present in the collection examined.

Among the drugs fully U. S. P. there occur, much to the author's surprise, Digitalis, which is of a strength one and a half times the present pharmacopoeial

* Read before Scientific Section, A. Ph. A., New York City meeting, 1919.

requirement, and Belladonna leaves well above the U. S. P. strength. Unfortunately the assay of Hyoscyamus and of Stramonium was not completed owing to lack of material in the samples. Both have been placed in the non-U. S. P. column because of their very brown color. However, the Belladonna leaves were also brown.

The Umbelliferous fruits, Anise, Caraway, Fennel and Celery, were all fairly good and would fully correspond with a good commercial grade of the same drugs today.

On the other hand the Labiate herbs were uniformly much depreciated. Peppermint was especially poor, Spearmint somewhat better, Catnip poor.

Other leaf drugs that had suffered appreciable depreciation were Buchu, Boneset, Coltsfoot, Witchhazel (?), Matico, Gaultheria and probably Pilocarpus. Humulus was brown in color but possessed an odor and taste characteristic of fresh, good hops. Lupulin also had a brown color but a fine odor and taste. Possibly repeated exposures to air are required to produce the disagreeable odor of deteriorated hops and lupulin.

Several samples of Bitter Orange peel, ribbons and quarters, Sweet Orange peel and Lemon peel were present and in each instance showed a marked depreciation in color and in odor, but, rather oddly, the odor was in no instance terebinthinate but always citrous. On the other hand, Prickly Ash berries, N. F., which normally have an odor of citral, were decidedly terebinthinate.

Some of the drugs, notably Colchicum seed, Gambir, Viburnum opulus, Rhamnus cathartica and possibly Asafoetida, the English Aconite and the first sample of Lobelia, have fallen into the non-U. S. P. column because they were of poor quality when placed in the collection.

	Fully U. S. P.*	Not fully U. S. P.*	Remarks.
1	Acontium, Ger.		Good appearance; assay, 0.55%. (U. S. P. 0.5%.)
2		Aconitum, Eng.	Small, short, thick roots, very gray externally; infested with insects; taste not fully acrid; assay, nil. (U. S. P. 0.5%.)
3	Anisum, Ital.		Odor and taste very good; free from conium, excess stem or clay.
4		Arnica	Dull gray-brown color; yellow florets all faded to brown; odor much weakened.
5		Asafoetida	Very dark red-brown; odor good; 57% soluble in alcohol. (U. S. P. 60%.)
6	Aspidosperma		
7		Aurantii Amari Cortex, ribbons	Yellowish brown, inner surface light brown; taste bitterish, weakly pleasantly aromatic, not terebinthinate.
8	Belladonnae Folia		Brownish color; assay, 0.32%. (U. S. P. 0.30%.)
9	Belladonnae Radix		Assay, 0.53%. (U. S. P. 0.45%.)

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	Fully U. S. P.*	Not fully U. S. P.*	Remarks.
10		Benzoinum, Sumatra	Very red externally; on freshly fractured surface for some distance inward from edge the tears were very reddish; odor good; crystals of benzoic acid on interior of bottle.
11		Buchu, long	Color much faded; odor and taste much weakened though characteristic.
12		Buchu, short	
13	Calumba		Good yellow color; very bitter.
14	Cannabis, American		Not assayed. (U. S. P. 0.03 mil of fluidextract.)
15	Cannabis, Indica		Not assayed. (U. S. P. 0.03 mil of fluidextract.)
16		Cantharis, Russian	Badly infested with insects; not assayed. (U. S. P. 0.6%.)
17		Capsicum	Genuine African; color much faded; odor somewhat rancid, "oily," taste very pungent.
18	Carum		
19	Caryophyllus		
20	Cascara Sagrada		Emodin tests, good.
21	Chondrus		
22	Cimicifuga		Strongly acrid.
23	Cinchona		Fine specimen of flat bark; assay, 6.3%. (U. S. P. 5%.)
24	Cinchona Rubra		Assay, 7.2%. (U. S. P. 5%.)
25	Cinnamon. Saigon.		Thick quill.
26	Cinnamon. Zeylon.		Better in odor and taste than present commercial article.
27	Coccus, silver		Large, plump, not heavily coated.
28	Colchici Cormus		Not assayed. (U. S. P. 0.35%.)
29		Colchici Semen	Not assayed. (U. S. P. 0.45%); small, shrivelled; many foreign seeds.
30	Digitalis		Color good; taste bitter; assay (by Dr. J. M. Francis of Detroit) M. L. D. 0.004 mil. (U. S. P. 0.006 mil.)
31	Eriodictyon		Odor and taste very good, color somewhat faded, veins not green.
32	Eucalyptus		
33	Foeniculum		
34	Frangula		Inner surface very dark brown; emodin test not strong.
35	Galla		
36		Gambir	Very dark and hard; much foreign matter; soluble in alcohol 43%. (U. S. P. 65%.)
37	Gelsemium		
38	Gentiana		
39	Glycyrrhiza, Russian		
40	Glycyrrhiza, Spanish		
41	Granatum, stembark		
42	Grindelia Robusta		Very stemmy.

	Fully U. S. P.*	Not fully U. S. P.*	Remarks.
43	Guaiacum		Very dark greenish externally; some chips present.
44	Guarana		Assay, 5%. (U. S. P. 4%.)
45		Humulus	Light reddish brown; odor much weakened but not disagreeable nor valerian-like.
46	Hydrastis		Assay, 2.8%. (U. S. P. 2.5%.)
47		Hyoscyamus	Very brown; not assayed. (U. S. P. 0.065%.)
48	Ipecacuanha, Cartagena		Assay, 1.75%. (U. S. P. 1.75%.)
49	Ipecacuanha, Rio		Assay, 2.05%. (U. S. P. 1.75%.)
50	Jalap		Assay, 10.5%. (U. S. P. 7%.)
51	Kino		
52		Lobelia, first sample	Straw-colored, very stemmy, slightly acrid, not sternutatory.
53	Lobelia, second sample		Strongly acrid.
54	Lycopodium		
55	Maltum		It converted five times its weight of starch into sugars. (U. S. P. 5 times.)
56	Manna, large flake		Yellow to light brown external color.
57	Manna, small flake		
58	Matricaria		
59		Mentha Piperita	Color much faded; odor weak; stemmy.
60		Mentha Viridis	Brown in color; odor and taste strong and characteristic.
61	Mezereum		Acridity rather slight.
62	Myrrha		Many pieces have a dark-red, soft, granular exudation.
63	Nux Vomica		Not assayed. (U. S. P. 2.5%.)
64	Petroselinum		
65	Physostigma		Not assayed. (U. S. P. 0.15%.)
66		Pilocarpus (Jaborandi)	Not assayed. (U. S. P. 0.6%); very brown.
67	Podophyllum		Assay, 3.7% resin. (U. S. P. 3%.)
68	Prunus Virginiana		Contains 0.078% HCN; color dark reddish.
69	Pyrethrum		
70	Quassia		
71	Resina		
72	Rheum		
73	Rosa Gallica		Color, odor and taste exceptionally good.
74	Sanguinaria		
75	Sarsaparilla, Honduras		
76	Sarsaparilla, Mexican		
77	Sassafras		
78	Scammoniae Radix		Genuine Levant; not assayed. (U. S. P. 8%.)
79	Scilla		Not assayed. (U. S. P., M. L. D 0.006 mil.)
80	Senega		
81	Senna, Alexandria		

	Fully U. S. P.*	Not fully U. S. P.*	Remarks.
82	Senna, India		
83	Serpentaria, Virginia		Odor and taste strongly camphoraceous.
84	Spigelia		Dirty, but free from Ruellia, etc.
85	Staphisagria		
86	Stillingia		
87		Stramonium	Brown color; heavy narcotic odor; not assayed. (U. S. P. 0.25%.)
88		Strophanthus, first sample	Brown to dark brown; not assayed. (U. S. P. 0.00006 mil).
89		Strophanthus, second sample	Small, pointed, very brown seeds; oily odor, strongly bitter; not assayed. (U. S. P. 0.00006 mil.) No greenish color with sulphuric acid.
90	Sumbul		
91	Triticum		
92	Uva Ursi		
93	Valeriana, Belgian		Clean, good odor and taste.
94	Valeriana, German		
95	Valeriana, English		
96	Veratrum Viride		
97	Viburnum Prunifolium		
98	Xanthoxylum, Northern		
99	Xanthoxylum, Southern		Unscraped; strongly pungent.
100	Zingiber, African		
101	Zingiber, Jamaica		

	Fully N. F.**	Not fully N. F.	Remarks.
1	Absinthium		
2	Agaricus		Very bitter.
3		Aletris	Badly infested; rhizomes almost destroyed.
4		Angelicae Radix	Taste rather harsh, acrid, not so aromatic as recent drug.
5	Apii Fructus		Color and odor fair; taste rather strong and disagreeable.
6		Asclepias	Color dark reddish; odor not good; taste slight.
7	Baptisia		
8		Berberis, first sample	No yellow internal color; somewhat bitter.
9	Berberis, second sample		Yellow internally, very bitter.
10		Calendula	Much faded; odor pleasant, slightly aromatic and bitter.
11		Cataria	Faded; odor very poor.
12	Caulophyllum		
13	Centaurium		Red color of petals bright; stems and leaves faded to straw color; odor pleasant; taste aromatic and bitter.
14	Cocculus Indicus		
15		Coffea Tosta	Odor strong, disagreeable; not assayed. (N. F. assay 1%.)
16	Coptis		Very fine yellow color and bitter taste.
17	Crocus		Color, odor and taste very good; not adulterated.

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** National Formulary, 4th edition.

	Fully N. F.**	Not fully N. F.	Remarks.
18	Cypripedium		Odor heavy.
19	Dioscorea		
20		Eupatorium	Color much faded; taste slightly bitter.
21		Farfara	Upper surface of leaves very dark brown.
22	Galanga		Odor and taste aromatic; not pungent.
23	Geranium		Fine sample; very reddish.
24		Hamamelidis Folia	Very red brown in color.
25	Helonias		
26	Ignatia		Not assayed. (N. F. assay 2%.)
27	Inula		Very fine.
28	Iris (Florentine Orris)		Very fine appearance and odor.
29	Juglans		
30	Kava		
31	Leptandra		
32	Lupulinum		Very good color and odor as of freshly dried Lupulin.
33	Mastic		Color yellowish brown.
34		Matico	Color much faded to a brown; odor and taste very slightly pepper-like.
35	Pareira		
36	Petroselini Radix		
37	Quillaja		
38		Rhamnus Cathartica	Fruits of *Rhamnus tinctorius* instead of *Rhamnus catharticus*.
39	Sambucus		Color good; odor and taste very slight; somewhat stemmy.
40	Scoparius		Color but slightly faded; taste strongly bitter.
41	Trillium		Taste very acrid.
42		Viburnum Opulus	Bark of *Acer spicatum*.
43		Xanthoxyli Fructus	Stemmy; odor terebinthinate, not of citral; no tingling sensation after chewing.

SUMMARY.

1. A collection of crude drugs in glass-stoppered bottles prepared twenty-five years ago was examined for the quality of the drugs and compared with the present U. S. P. and N. F. requirements.

2. Most of the drugs were very well preserved and fully met the present standards, notably: Aconite, Belladonna Leaves, Cinchona, Cinnamon, Digitalis, Lobelia, Malt, Matricaria, Prunus Virginiana, Rosa Gallica, Senna, Valerian, Ginger, Spanish Saffron, Florentine Orris, the Umbelliferous fruits, etc.

3. Among the drugs much depreciated were Orange and Lemon peels, the Labiate herbs (Peppermint, Spearmint and Catnip), and a number of leaf drugs (Buchu, Boneset, Coltsfoot, Witchhazel, Matico, Gaultheria and probably Pilocarpus).

4. Humulus and Lupulin, while brown in color, possessed a very fresh characteristic odor, not at all valerian-like.

5. A number of the drugs were adulterated or of poor quality when placed in the collection, notably Colchicum seed, Gambir, Viburnum Opulus (*Acer spicatum*), Rhamnus Cathartica (*Rhamanus tinctorius*), Asafoetida, English Aconite and one sample of Lobelia.

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THE PHARMACOGNOSY LABORATORY, ITS ACTIVITIES AND AIMS.*

BY ARNO VIEHOEVER.

This paper has been prepared in the hope that other workers, engaged in pharmaceutical and related research, may be induced to prepare similar statements, sufficiently detailed to indicate the nature of their studies, though the work may be still in progress. Thus we could hope to secure a census of pharmaceutical research in this country.

Such a census, it is believed, would largely prevent unnecessary duplication of work, and bring about increased coöperation; it would demonstrate the extended scientific activities of American pharmacists, pharmaceutical-botanists—chemists, physiologists—and the broad fields covered by their endeavor; it would suggest and stimulate new research.

The activities of the Pharmacognosy Laboratory may well be discussed under 2 headings: "Crude Drug Control" and "Pharmacognosy Investigations." This division, however, is rather arbitrary, since it is and has been our aim to carry on the one, drug inspection, with a research spirit, and the other, drug or plant investigation, with a practical view point.

I.

CRUDE DRUG CONTROL.

The work of the Pharmacognosy Laboratory in connection with the enforcement of the Food and Drugs Act consists in the main of examination of samples of appealed shipments, and the identification of unknown or mislabeled drug products which are sent in by inspectors, supervising interstate trade or importations. Some results of our activities along this line, throwing also a light on the nature of the work and the difficulties sometimes encountered, were presented at the last (1918) meeting of this Association and are published in the June number of the JOURNAL.[1] In connection with crude drug products which have come recently to our attention and which are as yet little known to the general trade, incorrect or misleading names were used. A note has, therefore, been prepared, which, after pointing out the existing varied bases for common names, urges greater care in the adoption and use of a common name and gives suggestions how the improvement may be brought about.[2]

Domestic Trade.—A preliminary survey was made of the crude drug industry of the Southern Appalachian Region, covering part of the mountains of West Virginia and North Carolina, in order to secure information regarding domestic trade practices. A paper relating the observations made on this trip is published in this JOURNAL.[3] A considerable number of different native drugs, largely of an unofficial nature, were also secured for reference and investigational purposes. A paper reporting the analytical data with regard to total and acid-insoluble ash, and total and volatile ether extract found in the specimens, numbering over 300, has been prepared for publication.[4] A note on "Commercial Hydrastis," discussing briefly the analytical results obtained in the examination of domestic samples, both in the whole and powdered state has also been prepared.[5] The major part of the samples, and especially those in ground state, were found to contain excessive amounts of sand and earthy material. Another note discussing the charac-

* Read before Scientific Section, A. Ph. A., New York City meeting, 1919.
Contribution from the Bureau of Chemistry, U. S. Dept. of Agriculture.

teristics of Man-root (*Ipomoea pandurata*), a possible substitute of Jalap-, Scammony- or Orizaba-resin, and two other convolvulaceous resins is in preparation.[6] A product called "linen seed" and submitted for identification was found to be *Hibiscus bifurcatus*. Though related to cotton seed (Gossypium) and containing like this appreciable amounts of a fatty oil, the phenolic and poisonous substance—gossypol—present in cotton seed, was absent in Hibiscus seed.

Import Trade.—Among adulterants found in import trade those of *Aethusa cynapium* for Conium leaves,[7] and *Santolina chamaecyparissus* for *Matricaria chamomilla*[8] were recently reported. Further should be mentioned the substitution in part of the seeds of *Jatropha curcas*, occurring in an imported shipment of castor beans, and the adulteration of "mustard" consisting of 85 percent Indian Tori (related to European rape) and only 15 percent of genuine Indian mustard, *Brassica juncea*. A root, probably of an unofficial smilax species, was found to be substituted for sarsaparilla; another, as yet not identified monocotyledonous root composed part of a shipment, labeled "Black Hellebore" (*Helleborus niger*), the remainder being genuine hellebore. Arnica Flowers were substituted by flowers of *Heterotheca inuloides* and rhubarb again by rhaponticum root. Service and Regulatory Announcements discussing the main differentiating characteristics of the adulterants in comparison with the genuine products, have been prepared, but not as yet published. Regarding previous announcements see (9).

Elimination of Inert and Objectionable Material in Crude Drugs and Spices.—General information has been obtained regarding the cleaning of different types of crude drugs and spices by washing, flotation, sifting, blowing, scraping and other methods based on difference of weight, size, shape or consistency. Specific information has been collected in the case of wormy or moldy nutmegs, areca nuts, ginger, orris root, and mustard seed.

Extension of Standardization of Purity for Drugs.—A large number of ash analyses of crude drugs have been made, with especial reference to the value of the acid-insoluble ash determination as an index of cleanliness. A paper calling attention to the value of such standards has been prepared and will be published in your journal.(10)

Value of Volume Weight Determinations.—Data have been collected to demonstrate the value of a more extended use of volume weight determination in the analysis of crude drugs and spices. The weight of a certain volume is extensively used in grain standardization and to some degree by the trade in the judgment of pepper. Recent findings with regard to areca nuts, nutmegs, fennel, ergot, mustard, etc., suggest that the weight of 100–500–1000 ccm. of crude drugs, as far as they are of fairly uniform size, such as seeds and fruits, or consist of powder, such as lycopodium or kamala, can often be used for an immediate indication of inferiority, due to worm infection, moldiness, immaturity, partial extraction, substitution, presence of sand or other foreign matter, etc.

Pharmacopoeial Work.—The collection of data dealing with the further improvement of the U. S. Pharmacopoeia has been continued. The nomenclature of the Pharmacopoeia as well as that of the National Formulary has been studied, especially with regard to the Latin names, English names, and synonyms for crude drugs officially recognized. As a result of this study it appears that further im-

provements tending to greater uniformity and clearness are desirable. The adoption, by the Pharmacopoeia and other standard works, of acid-insoluble ash standards and the change or adoption of certain standards for total ash has been urged in a note, already referred to.

THE PREVENTION OF WASTE AND UTILIZATION OF WASTE CRUDE DRUG PRODUCTS.

Cinchona.—In recent years the world has been virtually dependent on Java for its supplies of chinchona bark (or quinine). This has, especially under the recent war emergency, resulted in extreme scarcity and greatly increased prices. Considerable supplies of cinchona bark are still available in South America, though the trees are mostly wild. A number of specimens from these sources have shown marked variation in alkaloidal content; further samples of authentic bark have been obtained from Ecuador for pharmacognostical and chemical study.

Ipecac.—Ipecac root, as frequently imported, contains a considerable amount of so-called "stems," of which the present U. S. Pharmacopoeia only permits 5 percent at the most to be present in the drug. Collective evidence has been obtained that this part referred to as "stem" consists largely of the underground part of the axis, more properly referred to as rhizome; the young and still smooth roots at times may also be considered as stem, since they resemble the rhizome rather closely in appearance. These parts, evidently by mistake, referred to as "stem" were found to contain appreciable quantities of ether soluble alkaloids. It appears quite probable that the problem connected with the utilization of this hitherto rejected but valuable part of the Ipecac plant can be solved by the modification of the definition for Ipecac as "the dried roots and rhizome....." It is contemplated to publish a note on this subject.

Areca Nuts.—The material of areca nuts imported within recent years has not been of high quality. A sample, badly infected by worms and molds, was separated into sound, distinctly moldy, and wormy nuts. The three separations were analyzed for arecoline, according to the method of the Swiss Pharmacopoeia (1907), except that iodeosin was used instead of haematoxylin as an indicator, in conformity with a suggestion given in recent literature by Hebeisen. In order to ascertain whether all available arecoline had been extracted during the procedure suggested in the method, samples of each grade were extracted in soxhlets, and the extract treated as before.

RESULTS.

	Extraction according to Method in Swiss Pharmacopoeia.	Complete Soxhlet extraction.
Sound nuts	0.39–0.40% arecoline	0.37% arecoline
Distinctly moldy	0.32–0.34% "	0.32% "
Very wormy	0.36–0.38% "	0.34% "

Analysts: A. Viehoever and E. E. Stanford.

These results indicate that the alkaloidal content is highest in sound nuts, but that it is not very appreciably affected by worms and mold. Molds had a stronger effect than the worms. No grade of this sample attained the standard of 0.5 percent alkaloids, suggested by the Swiss Pharmacopoeia. Recently further samples of moldy and wormy areca nuts have been secured, and arrangements have been made with the Bureau of Animal Industry to submit them to pharmacological tests.

American Ergot.—The utilization of American ergot, obtained from rye screenings, has been under consideration in coöperation with the Central Inspection District located in Chicago. The products examined were in excellent condition and were found to be quite active physiologically; difficulties, however, are encountered in isolating the ergot on an efficient commercial scale from the creenings.

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II.

PHARMACOGNOSY INVESTIGATIONS.

Studies in Brassicas.—Growing experiments and chemical studies were carried out with several mustards and mustard substitutes.(1) The seeds were obtained from different parts of the world, and especially from Japan, China and India. They were planted in Arlington, Va., Yarrow, Md., and Urbana, Ill. The plants grew well in all three places, but especially vigorously in the rich soil of Illinois. The amount of seeds obtained per plant, and the pungency of the seeds, were great. In a number of instances sufficient material from individual plants was secured for the determination of the latitude in the amount of glucoside present. The amount of volatile oil found reached in certain cases as high as or even higher than any reported in literature. While the growing experiments were only carried out on a small scale, the results suggest that the commercial cultivation of all the different varieties, and especially the Japanese and white mustard, should be successful.

Preliminary experiments concerning the distribution of the glucoside or glucosides within the plant indicate that the fresh tissue of the different parts of the entire plant, roots, stems, leaves and fruitpods, yield an oil with characters similar to that obtained from the seeds. The enzyme, effecting the hydrolysis of the glucoside, appears present in the green plant in a highly active form, since the glucoside in the growing tissue is far more readily hydrolyzed than in the seeds.

A monograph on Chinese Colza is being published as a Department Bulletin.(2) It discusses the chemical, anatomical data of the seed, and the physiological data of the seed and seed constituents, and the morphological characters of the plant

in the different stages of its growth. A brief note has been prepared for a trade journal, discussing especially the value of the seed as an oil seed and as a substitute for rape.(3) While the seed had been first offered to the trade as mustard, the investigation proved the distinct difference from mustards and the close relationship to the colza group.

Studies on Oxalic Acid in Foods and Spices.—Studies on this subject are nearing completion. They had the object to determine the presence of oxalic acid as calcium oxalate or otherwise in the plant tissue by means of microscope and microchemical reagents;(4) and determine also quantitatively the amount of oxalic acid in different foods and spices.(5) Interesting data have been obtained which should be helpful to food and drug analysts, as well as to physiologists or pharmacologists.

Evidence that oxalic acid sublimes already at 100° C. and below was secured, and a new microchemical reaction with resorcin-sulphuric acid was worked out.

Studies of Spanish Digitalis, Digitalis thapsi.—In continuation of previous studies, incident to the identification of this spurious Digitalis (see S. R. A 19)(6) the plants grown from the seeds, that had been separated from the material imported, were harvested, being in their second and third year of growth. Further chemical, microchemical and pharmacological work is planned.

Studies of Saponins.—The work on saponins and saponin-yielding plants was carried out jointly with Drs. Johns and Chernoff in continuation of previous studies(7)–(10) on the same subject. The recent studies were concerned with plants growing quite abundantly in American deserts and are now partly utilized as emergency feed for cattle, as soap substitute and as fiber material. Manuscripts on *Agave lechuguilla, Yucca glauca* (*angustofolia*) and *Yucca radiosa* (*elata*), the latter usually referred to as soap weed, have been prepared for publication. Special attention was paid to the distribution of the saponins within the plant, to their chemical and hemolytic properties and probable function in the metabolism of the plant. The observation that in these desert plants the saponins occur in the cell sap or veins suggest that they are not only used as food material, suggested by the presence of one or more sugar molecules in saponins, but also serve, since they are generally hygroscopic, to retain moisture within the tissue during long periods of draught.

Cyanogenesis.—1. *Studies of Edible and Poisonous Varieties of Beans of the Lima Type* (*Phaseolus lunatus*).—These studies,(11) nearing completion, had the object in mind to establish botanical and chemical characteristics of seeds and plants, to find or develop reliable methods for testing and estimating the glucoside, as well as the hydrocyanic acid obtained from it by either acid or enzymatic hydrolysis,(12) to determine the latitude of varietal and individual variation in the glucosidal content and to render the beans harmless by cultural, chemical or physical means. Of the results obtained it may be stated that the seeds, and the plants in different stages of growth can be quite readily distinguished from other Phaseolus species of economical value in this country. The species *Phaseolus lunatus* is also chemically distinct from other Phaseolus species by lacking calcium oxalate in the seed coat and containing in all the varieties examined the cyanogenetic glucoside. Parts containing this, such as the inner kernel or the remainder of the

seed placenta, often visible at the hilum, are stained intensely yellow upon exposure to ammonia. This test, together with the characteristic arrangement of the veins in the seed coat, radiating from the hilum to the dorsal venture, are means of differentiation which can be readily determined macroscopically, while the lack of calcium oxalate can be easily established microscopically. The American grown varieties "Limas" appear to contain the cyanogenetic glucoside in the smallest amount of any grown anywhere, and the beans may, therefore, as far as the results at hand show, be considered harmless.

2. *Fate and Significance of Linamarin in the Metabolism of the Bean Plant, Flax, Etc.*—To solve this problem seeds of several varieties of *Phaseolus lunatus* and also flax seeds have been germinated and the amount of HCN present under different conditions of germination has been determined. These studies are being continued with plants in different stages of growth and grown under different conditions.

The effect of frost and drying has also been under consideration. A loss of HCN in the first case is certain, and in the second case strongly indicated. No free HCN has positively been found in the plant and no HCN is apparently exhaled under normal conditions. The glucoside in the leaves and other growing tissue is evidently much more speedily hydrolyzed than in the seeds, probably due to the fact that the enzyme, effecting the hydrolysis of the glucoside, is in a far more active form present in the green growing tissue than in the seed.

3. *Distribution and Occurrence of Cyanogenetic Glucosides.*—In continuation of previous studies(13) other vegetable products were tested for hydrocyanic acid, however with negative results. The following may be mentioned: Horse beans (*Vicia faba*), Tepary beans (*Phaseolus acutifolius* var. *latifolia*), Azuki beans (*Phaseolus angularis*), a Japanese or Chinese bean, also called "Adzuki," Jack beans (*Canavalia ensiformis*), Velvet beans (*Stizolobium deeringianum*), Spanish or Runner beans (*Phaseolus multiflorus*), Soja beans (*Soja hispida*), and Mexican and oriental (Japanese, Chinese and Manchurian), varieties of common beans (*Phaseolus vulgaris*).

4. *Isolation of Hydrocyanic Acid and the Glucoside Yielding it from Indian Beans of Lima Type, Phaseolus lunatus, from Flax, Linum usitatissimum, Etc.*—The studies have resulted in a very simple method of isolation of the glucoside from the beans. The ground bean meal is extracted repeatedly with ethyl acetate, and this then shaken out several times with very small amounts of water. Upon evaporation of the water, preferably without application of heat, the glucoside is obtained in surprisingly pure, white to yellowish crystals. For the isolation of the glucoside from flax this method had to be modified, since in flaxseed the great amount of oil, of water-soluble slime and of wax, interfered very much.

Preliminary experiments with certain chemicals acting upon the glucoside or the beans effecting a transformation of the poisonous glucoside have been very successful and will be continued on a larger scale and extended to other cyanogenetic products.

Study of Piper bredemeyeri, an Adulterant of Matico.—An examination of the volatile oil revealed the absence of asaron, found in matico, *Piper angustifolium*, and of matico camphor, found in *Piper angustifolium* var. *ossanum*. Over 50 percent of dill apiol were present in the volatile oil of *P. bredemeyeri;* in this and

other respects the oil resembled the volatile oil of *Piper mandoni*, as reported in literature. The chemical and botanical similarities of *P. bredemeyeri* and *P. mandoni* suggest that the name *P. mandoni* has been given to plants belonging to the species *P. bredemeyeri*.(14) Recent reports indicate that material of matico and especially also of volatile matico oil vary greatly in composition. The medicinal qualities of matico have been questioned. Matico has been deleted from the U. S. Pharmacopoeia, though it is now included in the National Formulary. While the medicinal value, as said, of matico is in question, that of the adulterant *P. bredemeyeri* and other related Piper species is still more in doubt. No physiological tests have as yet been made. Attempts to secure further authentic material of different Piper species were unsuccessful.

Studies of Cedron Seed, Simaba cedron, and the Glucoside Cedrin.—From cedron seed, originating in Central America, and used there against snake bites and yellow fever, the bitter principle "cedrin" had been isolated some time ago.(15) Certain physical and chemical properties had been determined and the glucosidic character definitely established. The nature of the sugar in the glucoside could, however, not be ascertained due to insufficient amounts of cedrin available. Recently, however, after prolonged attempts, more material of cedron seeds was obtained through the efforts of the Office of Foreign Seed and Plant Introductions, B. P. I., U. S. Department of Agriculture. The studies can therefore be taken up again and completed.

Microsublimation.—Extended studies of microsublimation in its relation to food and drug analysis were undertaken. A critical study of the types of apparatus used in this work has resulted in the development of improved apparatus and methods. A general paper discussing the value of microsublimation in food and drug analysis is under consideration. The ready sublimation has been effected of santonin from worm seed, oxalic acid from calcium oxalate in beans, of quercetin, obtained from the cotton plant, of sapogenin, obtained from Agave saponin, and of a number of other substances. It is contemplated to prepare brief notes recording the observations made.

Studies of other Vegetable Products.—1. Tepary Beans.—A brief study of Tepary beans (*Phaseolus acutifolius* v. *latifolius*), a newly discovered food product of the Indians, has also been made and a note discussing the chief characteristics is in preparation for publication.(16) 2. Coffee.—A considerable number of samples of coffee, including damaged coffee, have been examined and data collected indicating the relation of grade to objectionable material present. Microscopical changes have been observed, which, together with a specific stain (17) for the presence of mold, have proved of value in the judgment of the quality of import and interstate samples. The data obtained have helped to increase our knowledge of the nature and extent of changes which take place through maturing and through spoiling of coffee. The work will be continued. 3. Peat.—The nature of nitrogen in peat and the possible value of peat in feed products is another problem, to which some attention is being given. Experiments were undertaken to locate microchemically chitin, possibly responsible for some of the nitrogen. Considerable difficulty was experienced in breaking up and identifying the highly carbonized peat particles. Potassium hydroxide has thus far been found to be the most useful agent in breaking up peat without dissolving chitin, which is con-

verted to chitosan and can as such be specifically stained.(17) While further experiments have to be made, the results thus far obtained are promising. Chitin likely is only accidentally present in peat, due to numerous dead bodies of insects buried in peat and containing chitin.

Isolation and Study of the Composition of the Cotton Plant, Gossypium herbaceum, and other Gossypium Species.—A volatile oil, decidedly attractive to boll weevils, has, with the assistance of Drs. Johns and Chernoff, and others, been isolated from different parts of the cotton plant. The oil is found in lysigenous glands which are located near the surface in nearly all parts of the cotton plant. Besides the oil, these glands contain flavone glucosides, if exposed to light, and gossypol, if unexposed to light.(19) Two papers, discussing the findings in detail, have been published in the *Journal of Agricultural Research.*(18,20).

Differentiation of Plant Species.—The value of pollen grains for the differentiation of species is under investigation. Numerous other data on the morphological, anatomical, chemical and physiological differentiation of plant species, genera, etc., have been or are being collected. These data have been very valuable in deciding questions of true relationship of plants and plant products. The knowledge of the proper classification of a vegetable product or plant, we feel, often permits a preliminary judgment as to their possible utilization for medicinal, food or technical purposes.

COÖPERATION.

The laboratory has coöperated with the Scientific Division of the Shipping Board in formulating a revised system of classification of imports and exports of crude drugs and chemical products. Data on various products have been furnished the Price Section of the War Trade Board. Detailed and constructive criticism has been made of the crude drug portion of the import tabulation of chemical products, which was drawn up under the auspices of the Department of Commerce. Information on several drug products has been furnished the Tariff Commission. Some work of a confidential character has been carried out for the Aircraft Production Board. The laboratory has coöperated with different laboratories of the Bureau of Plant Industry, *e. g.*, in the growing of a number of plants, such as Spanish digitalis, mustards, beans, etc.; with the Bureau of Entomology in the fight of the cotton boll weevil, and is assisting the Smithsonian Institution in the identification of certain supplies, especially Cinchona barks, secured by Dr. Rose in his exploration of Ecuador. The laboratory has further assisted with advice other institutions, such as the Bureau of Science, Philippines, the Department of Internal Revenue in Canada, or other state institutions and private parties in this country. Suggestions regarding the further improvement of the Pharmacopoeia have been submitted to the Pharmcopoeial Committee and it is hoped to continue not only this coöperation but to extend it also to the Committee concerned with the revision of the National Formulary.

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ACID-INSOLUBLE ASH STANDARDS FOR CRUDE DRUGS.*

BY CLARE OLIN EWING AND ARNO VIEHOEVER.

Having had occasion to review analyses of a considerable number of domestic and imported crude drugs with regard to their content of ash and acid-insoluble ash, the attention of the writers was called to a number of instances where a striking discrepancy occurred between the general run of analyses and the U. S. Pharmacopoeia and National Formulary Standards. In some instances it appeared that the present standards were somewhat rigid, whereas in others the ash standard was placed so high as to excite suspicion that a sample of the product in question yielding such an ash would be extremely dirty. It appeared, furthermore, that determinations of the ash insoluble in 10 percent hydrochloric acid would often disclose the true condition of the material, as regards cleanliness, and that an ex-

* The changes of existing standards and the establishment or adoption of new limits as standards, suggested in this manuscript, should be considered as an expression of our personal opinion and not as an official announcement of the Bureau of Chemistry.

tension of ash standards, including limits for acid-insoluble ash, would be very much preferable to the present standards.

The requirement of a standard for ash in connection with vegetable crude drugs is comparatively modern. It seems to have been first introduced practically simultaneously in the U.S. Pharmacopoeia VI (1882) and the German Pharmacopoeia II (1882). There was apparently considerable commercial opposition to the inclusion of such ash standards and the expansion of the practice proceeded rather slowly; in the U. S. Pharmacopoeia VIII (1905) there were a trifle less than thirty. The last Pharmacopoeial Revision Committee appears to have been fully converted to the practice, and there are only a few exceptions in the present revision (IX) where standards for ash are given; among these, however, are such important drugs as cascara sagrada, hydrastis, wild cherry, sanguinaria, and black haw. The Committee went even a step farther in its efforts to insure clean drugs and in a few instances included standards for acid-insoluble ash, notably in the cases of Saigon and Ceylon cinnamon (ash 6 percent, acid-insoluble ash 2 percent), black pepper (ash 7 percent, acid-insoluble ash 2 percent), and senna (ash 12 percent, acid-insoluble ash 3 percent), although oddly enough, no method for its determination is given. We are convinced that this is a rather serious omission, and that not only should a method be inserted in the Pharmacopoeia, but the practice of including insoluble ash standards should be extended, in support of which opinion a number of specific examples are cited herewith:

Asafoetida.—The U. S. Pharmacopoeia allows the use of either starch or magnesium carbonate as diluents in order to maintain the powdered form of asafoetida; in order to allow for the presence of magnesium carbonate the ash limit of the powdered asafoetida is raised from the 15 percent of the whole drug to 30 percent, although, if starch were used, an extremely dirty product, when powdered, would comply with the 30 percent standard. It is of interest in this connection, that although crude asafoetida may yield as low as 5 percent or less of ash, samples have been noted which yielded over 50 percent. Attempts have been made to import some lots yielding over 15 percent but less than 30 percent, for use in the preparation of the powdered drug. We believe this to be contrary to the intent of the Pharmacopoeia. In order to obviate these possibilities, the use of magnesium carbonate might well be discontinued, and starch only be specified. By so doing the same ash standard could be enforced for the powdered as for the crude drug. The occurrence of material containing such high amounts of ash indicates lack of care in collection, and is strong presumptive evidence that the collector may have been none too scrupulous regarding the source of his material; in fact, in a number of instances asafoetida which was found to be extremely dirty, also failed to comply with all of the U. S. Pharmacopoeia tests of purity, notably the ferric chloride test for foreign resins. The adoption of a standard for acid-insoluble ash would serve to discourage the importation of extremely dirty material. Such a standard would not even interfere with the use of magnesium carbonate as a diluent, inasmuch as this substance is soluble in the acid solution and only the dirt, sand, pebbles, etc., would be revealed by that determination.

Hydrastis.—Thirty-one commercial samples of hydrastis root showed a range of 4.49 percent to 17.81 percent of total ash, and 1.27 percent to 11.22 percent

acid-insoluble ash[1]. It was noteworthy in this connection that the samples of genuine whole root generally yielded lower percentages than the powdered specimens. The nature of the product is such that one would of course expect that certain amounts of earthy material might be included in the commercial handling of the drug, but obviously such a high amount as the 11.22 percent above noted is beyond all reason. At the current price of over $5.00 per pound a person buying a 100 pound lot of the drug would be paying over $50.00 for valueless material. It is of interest in this connection that the Austrian (VIII, 1906) and Swiss (IV, 1907), Italian (III, 1909) and Netherland (IV, 1905) pharmacopoeias all have an ash standard of 6 percent. While only few samples which we had under observation came up to this foreign standard of 6 percent, it should be remembered that golden seal root is one of the few domestic drugs which is exported to these European countries in large amounts, and there appears no reason why the drug used in the home trade should not be collected and handled with the same care as that which is designed for export. We feel also that in a case like this where the drug is so expensive, it is of especial importance to provide not only a suitable standard for total ash, but also one for acid-insoluble ash. We would therefore suggest that a standard of 8 percent (or possibly even 6 percent) for total ash, and also a limit of 2.5 percent for acid-insoluble ash be adopted.

Hyoscyamus.—Hyoscyamus is also a comparatively expensive drug and should have an ash standard lower than the present limit of 30 percent. The German Pharmacopoeia (V, 1910) has a limit of 24 percent, the Austrian (VIII, 1906) of 20 percent; this latter figure may be somewhat rigid—Wilbert[2] has stated that the Austrian Pharmcopoeia has been severely criticized for its generally low ash content requirement for drugs and that the figures cited there are largely academic.

Newcomb's data[3] are of especial interest since he examined both commercial samples of Hyoscyamus and carefully cleaned material, which he had grown himself in the medicinal garden of the University of Minnesota. From his data the variation in ash content of different parts of the plant is evident, but the results are also suggestive with regard to the effect of cleaning.

ASH CONTENT OF HYOSCYAMUS.

	Part of Plant.	Source.	Percent of ash.
(1)	Basal leaves, 89% Flowering tops, 11%	Commercial sample	21.69
(2)	Basal leaves, 89% Flowering tops, 11%	Commercial sample	19.97
(3)	Flowering tops	Select commercial sample	9.88
(4)	Flowering tops	Select commercial sample	9.48
(5)	Flowering tops	Select commercial sample	9.54
(6)	Flowering tops	Select commercial sample	9.06
(7)	Basal leaves, first year	Medicinal plant garden	16.02
(8)	Basal leaves, first year	Medicinal plant garden	16.17

[1] Analysts: Mr. Elgar O. Eaton, San Francisco Station; Mr. Hugo I. Wichmann, Denver Station; Mr. F. O. Woodruff, Boston Station; Mr. C. K. Glycart, Chicago Station. (All of the Bureau of Chemistry.)

[2] Wilbert, M. I., J. A. PH. A., 1, 457, 1912.

[3] Newcomb, E. L., Belladonna and Hyoscyamus," *Amer. Journ. of Pharmacy*, 87, 8, 1915.

Analyses of 12 commercial samples made by different analysts of the Bureau of Chemistry showed a range of 18.2 percent to 30.52 percent of total ash, and 11.6 percent to 19.05 percent of acid-insoluble ash.

Based upon the data at hand, an ash standard of 24 per cent, supplemented by an acid-insoluble ash standard of 12 percent would appear to be suitable and should conduce toward greater cleanliness in this product. In conversation with a number of growers and large commercial users of hyoscyamus the writers have been informed that it would be entirely practicable in a commercial way to comply with such limits.

Mustard.—Within the past several years the writers have analyzed or reviewed analyses of probably more than 200 specimens of mustards of different species and varieties, and have rarely observed a specimen of clean material yielding over 5 percent of total ash, or over 1 percent of acid-insoluble ash. Commercial methods for cleaning mustard have been so far developed that material may invariably be obtained containing less than these amounts, although the present U. S. Pharmcopoeia standard for both black and white mustard allows 9 percent of total ash. The Department of Agriculture some time ago promulgated a standard of 5 percent total ash for mustard used as a food, and a limit of 1.5 percent of ash insoluble in hydrochloric acid.[4] A few instances have in the meantime come to our attention which suggested that the standard for total ash might be 6 percent rather than 5 percent, in order to cover exceptional cases of naturally high ash in the seed. The standard thus amended, 6 percent for total and 1.5 percent for acid-insoluble ash appears quite satisfactory for mustard used as a drug or as a food.

Rhubarb.—In connection with rhubarb several interesting cases have recently come to light. In one instance a sample of the powdered drug, having been analyzed and found to yield about 20 percent of ash, which of course is far in excess of the U. S. Pharmacopoeia limit of 13 percent, the dealer was cited. It developed in the hearing that the material had been ground from a very fine grade of Shensi rhubarb, the variety most highly prized by the trade. Some of the original whole drug being available, this was submitted to the Department for analysis. The analysis[5] of the sample, which was clean and of excellent appearance, revealed that the material contained about 20 percent of total ash, of which less than one-tenth of 1 percent was insoluble in acid. Rhubarb is known to contain comparatively large amounts of organic acids, especially oxalic in the form of calcium oxalate. It was, therefore, not altogether surprising that a sample which yielded such a high ash should show as well such a low acid-insoluble ash. Since this occurrence several other shipments have been offered for importation which also yielded a total ash in the neighborhood of 20 or 21 percent, although in every instance the acid-insoluble ash was practically negligible. It would appear, therefore, that the present limit of 13 percent total ash for rhubarb should be raised to 22 percent; by including at the same time an acid-insoluble ash standard of 1

[4] *Food Inspection Decision*, 1918, 172. "Condiments other than Vinegar and Salt," par. 33.

[5] Analyst: Mr. Eugene Bloomberg, Buffalo Laboratory, Bureau of Chemistry.

percent, sophistication of a powdered drug normally yielding a low total ash would in a considerable measure be prevented.

Sassafras.—Sassafras is a drug which is altogether of domestic origin, and since facilities for inspection of domestic drugs are not so advantageous as for imported drugs, attention has not heretofore been directed to the present absurd U. S. P. ash standard of 30 percent. Recently, however, analyses[6] of two authentic clean specimens showed a total ash of 2.5 percent and 3.7 percent and an acid-insoluble ash of 0.5 percent and 1.3 percent, respectively. Another sample which yielded a total ash of 18.85 percent showed an acid-insoluble ash of 14.8 percent; the latter consisted very largely of earth and sand. This also was an authentic sample, but was extremely dirty. Other analyses of this product which have been noted in the Bureau, as well as analyses reported in literature, show that it is entirely practicable to obtain commercial material which yields less than 10 percent of total ash and 5 percent of acid-insoluble ash. Even these figures appear far too liberal for a standard.

While the instances cited above by no means exhaust the list of drugs where present standards could be advantageously altered and supplemented by standards for acid-insoluble ash, they include some of the more striking illustrations which have been recently noted.

The effect which the presence of different parts and portions of the plant may have on total ash is discussed above in the case of Hyoscyamus. Newcomb and Rogers[7] also brought this out in the case of Digitalis, and Sievers[8] in the case of Belladonna. It appears to be quite a general rule, observed by other workers as well as ourselves, that the leaves are richer in ash than the stems or flowers, and that the more stems there are present the lower usually will be the ash. This seems to hold true also for the acid-insoluble ash.

The influence which varietal, environmental, and soil conditions in particular may have on the amount and composition of ash has also been previously discussed in the literature. Rogers and Newcomb have recently discussed this in the case of digitalis, and have pointed out that the cultivated forms, on the average, yielded higher amounts of ash than the wild form.[9] We have pointed out above in the case of rhubarb that a high ash is not necessarily an indication of uncleanliness; since rhubarb contains considerable amounts of oxalic acid in a soluble form, it is readily conceivable that in plants grown in calcareous soils the amount of calcium oxalate may be appreciably greater than in plants grown on other soils.

When the pure ash of a vegetable drug is heated with 10 percent hydrochloric acid, only a small portion, as a rule, remains undissolved. From the amount, then, of this acid-insoluble portion of ash one can usually draw a definite conclu-

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[6] Analyst: J. F. Clevenger, this laboratory.

[7] Newcomb, E. L., and Rogers, C. H., "The Relative Activity of Separated Portions of Digitalis," *Amer. Journ. of Pharmacy*, 90, 580–8, 1918.

[8] Sievers, A. F., "The Percentage of Stems on Belladonna Herb and Its Effect on the Quality of the Herb," *Ibid.*, 90, 847, 1918.

[9] Rogers, C. H., and Newcomb, E. L., "A Method for Cleaning Digitalis, with a Study of the Inorganic Constituents," *Ibid.*, 90, 239–252.

sion as to the presence or absence of sand and earthy material in a drug sample.[10] The determination of the amount of acid-insoluble ash present in a drug will therefore be valuable as a test for purity. It requires very little more time than the ash determinations, and is, as we have seen, sometimes of even more value than the latter in the final judgment of cleanliness. The addition of an acid-insoluble ash standard will permit the raising of the total ash standard of a number of drugs, such as rhubarb, mentioned above, in order to cover wide variations due, probably, in the main, to soil conditions, and at the same time guard against careless handling or gross adulteration of drugs both in the whole and particularly in the powdered form.

The following simple method has been followed by the writers for a number of years:[11]

To the ash obtained by the U. S. Pharmacopoeia method is added 25 Cc. of 10 percent hydrochloric acid. This is digested on a steam bath for about 10 minutes, filtered, washed, ignited over a bunsen burner, cooled, and weighed.

While it is well known that a certain amount of siliceous matter can only be rendered insoluble in hydrochloric acid by several evaporations to dryness, the method as given approximates that given for the determination of ash insoluble in acid in the Bureau of Chemistry Bulletin 107, Revised (1912), page 162, under "Methods for the Analysis of Spices," and is sufficiently accurate for purposes of crude drug control.

PHARMACOGNOSY LABORATORY,
BUREAU OF CHEMISTRY
U. S. DEPARTMENT OF AGRICULTURE.

ON THE SHRINKAGE OF ALCOHOL-WATER MIXTURES.

BY HORATIO C. WOOD, JR., M.D.

The United States Pharmacopoeia states that when 500 mils of alcohol are mixed with 500 mils of water "if the two liquids are measured at the temperature of 25° C, the mixture when cooled to the same temperature will measure about 970 mils." In some experiments which I have been engaged in, it was important to know what volume percentage of alcohol would result from mixing alcohol of a given strength with water. It is evident that a mixture, for example, of equal volumes of absolute

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[10] Fortunately the dust, dirt, and sand often adhering to drugs after collection can, to a considerable degree, be removed, even if the drugs are in the dried condition. Rogers and Newcomb (*loc. cit.*) have shown this in the case of digitalis, and we also have had similar experience with other drugs (mustard, for example). The importance and feasibility of cleaning drugs, however, appears to be not so widely recognized as it should be. The more the machines and methods used in the grain and related industries are applied to the cleaning of drugs and spices, the less difficulty will the trade experience in obtaining high grade products.

[11] To demonstrate the presence of sand and dirt directly in a powdered drug, without an ash analysis or microscopic examination, we have in a few instances floated the material on carbon tetrachloride, a liquid of high specific gravity (1.630). The vegetable matter usually floated on the surface, while the mineral impurities sank to the bottom. A very dirty commercial sample of Pennyroyal leaves so treated yielded a precipitate which, when dried, amounted to 26.7 percent while an acid-insoluble ash determination gave 27.9 percent, the two results being in surprisingly close agreement.

alcohol and water, would give a solution containing more than 50 percent by volume of alcohol, because while the amount of alcohol remains the same there is a shrinkage in the total volume of approximately 3 percent. It is manifest that the statement of the Pharmacopoeia is too indefinite to be of any scientific use; moreover, it is important to know whether the shrinkage is at the same rate for all proportions; that is, would a mixture of one part of alcohol with two parts of water diminish in volume in the same proportion, as a mixture of equal parts? As I have been unable to find this data, I have made a small series of observations to determine what the degree of shrinkage is with various proportions of alcohol and water.

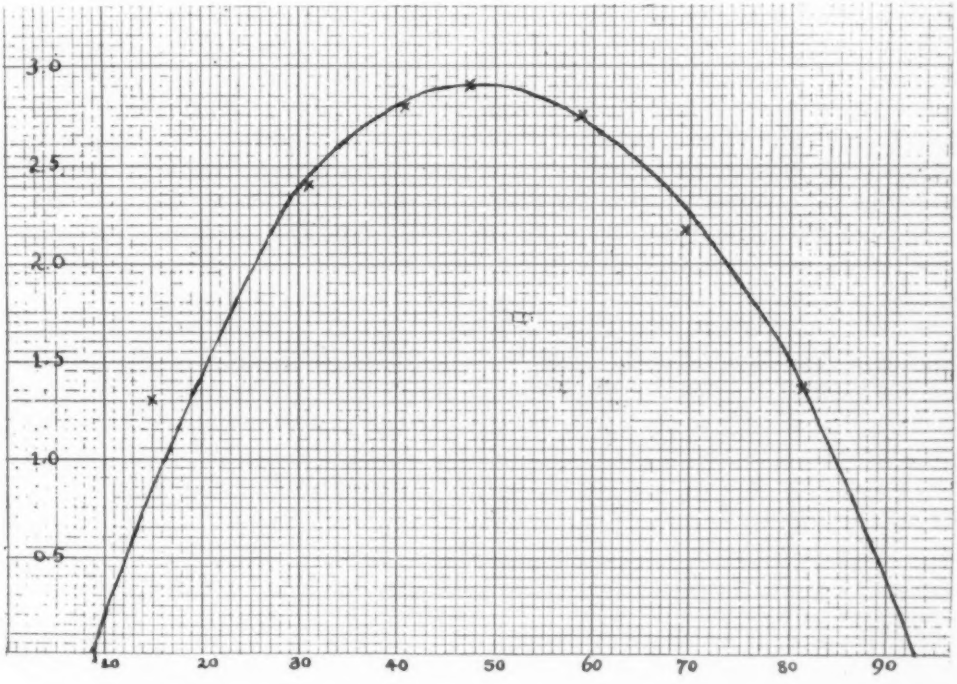

Fig. 1.—Graph showing the shrinkage in volume when water is added to 93 percent alcohol. Figures on the abscissa indicate expected percent of alcohol; figures on the ordinate indicate percent of shrinkage in the volume of the mixture. Curved line is drawn from calculations based on Pharmacopoeial tables (see Table 2); crosses represent experimental averages (from Table 1).

For reasons of convenience, I have used in these experiments an alcohol containing 93 percent by volume. I have found that our laboratory alcohol, supposedly 95 percent, showed this latter concentration, when tested by the hydrometer, only at a temperature of approximately 25° C. At the official temperature of 15.56°, it represented about 93.5 percent of alcohol. In order to avoid the complications of dealing with too many fractions, I added water to bring the percentage down to correspond with 93 percent at 15.56°, measured by the Tralles hydrometer.

The method of experimentation employed was as follows: A carefully mea-

sured amount of alcohol, varying from 10 to 25 mils, was placed in a burette graduated in tenths of a mil. To this was added a measured volume of distilled water, say 5 mils. The burette was then tightly stoppered and reversed several times to assure a thorough commingling of the alcohol and water, allowed to stand for a few minutes, in order that the temperature of the mixture might return to its norm, and the volume of the mixture read. The difference between the volume read and the sum of the amounts of alcohol and water taken, represents the amount of shrinkage which has taken place; by a simple arithmetical calculation was determined the percentage of shrinkage. To this mixture were then made further additions of water, usually in 5 mil portions, with similar readings and calculations after each addition. In this way was obtained a series of figures showing the diminution of volume by adding water to varying strengths of alcohol.

The quantities employed being so small, it was not surprising that there was quite a little variation in the individual results. For example, three observations with mixtures of water and alcohol in the proportions which should have yielded an alcohol of 40.7 percent (in all cases, unless otherwise stated, the percentage of alcohol refers to volume percent); the shrinkage in one was 2.57 percent, in another, 2.29 percent, and in the third 2.70 percent. While there were considerable individual variations, by repeated experiments average figures were obtained which were consistent with each other and also with a theoretical shrinkage, figured, in a manner I shall describe, from the tables in the Pharmacopoeia. The amount of shrinkage is given both in a table and in a curve, made by plotting the various observations. I may say here, that in a general way the shrinkage was greatest at a little over 50 percent, amounting to about 2.9 per cent, and diminished at about the same rate when either the quantity of water or alcohol was lessened. The lowest percentage of alcohol tested was 8.48 percent, which gave a shrinkage of 0.63; and the highest 83.13 percent, with a shrinkage of 1.25 percent (see Table 1).

TABLE 1. SHOWING SHRINKAGE FOUND EXPERIMENTALLY WITH ALCOHOL-WATER MIXTURES.

Expected Percent Alcohol.	Shrinkage. Found.	Averages.	Expected Percent Alcohol.	Shrinkage. Found.	Averages.
8.48	0.63%		50.81	2.67%	
			53.78	2.78	
14.43	1.72		53.92	2.98	
15.57	1.07		52.50	....	2.810
15.00	....	1.395	55.42	2.90	
24.17	2.29		59.43	2.83	
31.67	2.00		58.81	2.86	
31.67	2.33		61.58	2.41	
32.17	2.93		58.81	....	2.750
31.86	....	2.420	66.50	2.20	
38.54	3.04		67.85	2.43	
40.71	2.29		.....	....	
40.71	2.57		73.88	1.89	
40.75	2.70		69.41	....	2.750
43.77	3.31		.....	....	
40.90	....	2.802	79.16	1.50	
47.50	2.80		.....		
47.50	2.97		83.13	1.25	
47.50	....	2.885	81.14	....	1.375

As just mentioned, it is possible to figure the proportion of shrinkage, when mixtures of absolute alcohol and water are used, from the alcoholometric tables in the Pharmacopoeia. This was done on the following basis: suppose, for example, it is desired to know the amount of shrinkage when 60 volumes of absolute alcohol are mixed with 40 volumes of water. First, obtain the weight percent of the alcohol in this mixture, by multiplying 60 by 0.79365 (the specific gravity of absolute alcohol); to this is added 40 (the quantity of water used) and divide this sum into the weight of alcohol employed. The weight percent obtained in this manner is 54.348. By reference to the Pharmacopoeial tables, it is found that an alcohol containing this weight percentage is equivalent to a volume percent of 62.193. Evidently, there has been a diminution in the volume of the mixture; the volume of the mixture may be determined by dividing 60 (the expected percentage) by 62.193, the found percentage. The result of this division equals 96.475. Subtract this from 100, and we get the figures 3.525, representing the percentage of shrinkage which takes place when 60 volumes of absolute alcohol are mixed with 40 of water. Similar calculations were made for ten different proportions of alcohol and water, enough to allow the construction of a curve representing the shrinkage of mixtures of alcohol and water. (See Table 2.) It was found that, with absolute alcohol the shrinkage was greatest when 54 parts of alcohol were mixed with 46 parts of water, being equal to 3.612 percent of the expected volume.

TABLE 2. SHOWING SHRINKAGE IN ALCOHOL-WATER MIXTURES FIGURED FROM ALCOHOLOMETRIC TABLE OF U. S. PHARMACOPOEIA.

Expected Percent Alcohol.	Found Percent Alcohol.	Shrinkage with 100% Alcohol.	Shrinkage with 93% Alcohol.
10	10.07	0.715	0.575
20	20.345	1.696	1.416
30	30.833	2.699	2.380
40	41.388	3.353	2.794
50	51.866	3.595	2.897
54	56.017	3.612	2.858
60	62.193	3.526	2.688
70	72.320	3.209	2.236
80	82.160	2.629	1.512
93		1.299	0.00

It is obvious that since a considerable diminution in volume takes place when 7 parts of water are added to 93 of alcohol (in making a 93 percent alcohol), the amount of shrinkage which would take place when 93 percent of alcohol is mixed with the water, would be less than that indicated in the accompanying table. To determine this difference, I first found the shrinkage in reducing 100 to 93 percent alcohol; this is 1.299 percent. This is then multiplied by the number of parts of alcohol taken—for instance, with the example given above, by 60—and since it would take obviously more than 60 parts of 93 alcohol to make 60 volume percent, the result of this multiplication was divided by 0.93. This factor, representing the difference due to shrinkage in 93 percent alcohol, is then to be subtracted from the shrinkage found in 100 per cent alcohol. When this is done, as may be seen by reference to the tables 1 and 2, the result is very close to the average shrinkage obtained in my observations, varying from them only in the second decimal place. I have constructed a curve showing the theoretical shrinkage

(figured from the U. S. P. tables) on which are marked the averages (from Table 1) which I obtained by actual experiment. Table 3 gives the shrinkage and true volume percent of alcohol when 93 percent alcohol is mixed with water in the proportions which should form various strengths of alcohol.

TABLE 3. SHOWING CHANGE IN VOLUME PERCENT OF MIXTURES OF 93 PERCENT ALCOHOL WITH WATER.

Expected Percent Alcohol.	Shrinkage Percent.	True Percent Alcohol
20	1.42	20.28
30	2.38	30.73
40	2.79	41.15
50	2.90	51.49
60	2.69	61.66
70	2.24	71.60
80	1.51	81.23

A NOTE ON A VERY OLD SPECIMEN OF PEPSIN.

BY L. E. WARREN.

An occasion recently arose to examine some rather old pharmaceutical preparations which were claimed to contain pepsin. Since the specimens were of unknown age (but known to be at least about 9 years old) the question arose as to the proper method to be used for making the test for proteolytic power. Since it was not the object of these tests to determine whether the preparations contained pepsin conforming to the present U. S. P. standards, and as the laboratory constant temperature bath was in use for other experiments at 40° C. and was to be so employed for a long period, it was decided to use this temperature according to the method prescribed by the U. S. Pharmacopoeia of 1890 for the valuation of pepsin. In brief, the method consists in digesting ten grammes of moist egg albumen for six hours at a temperature of from 38 to 40° C. with 100 Cc. of 0.2 percent hydrochloric acid which contains 0.0035 Gm. of pepsin.

As some of the preparations to be tested (tablets) had been in the laboratory for a number of years the question of the stability of pepsin had to be considered. It chanced that a very old specimen of pepsin and another which had been received ten years before were in stock. It seemed worth while to compare the proteolytic activity of the two old specimens with a specimen of pepsin of recent purchase, using the assay method outlined above as employed on the other pepsin preparations.

The history of the old specimen was not positively established but it is believed to have been prepared by Mr. F. S. Hereth. The label bore the statement that it had been prepared during the months of October and November, 1880. Consequently at the time of this test (July), its age was probably nearly thirty-nine years. Unfortunately its initial proteolytic strength was not known, but since the methods for preparing pepsin were not so refined four decades ago as now, it is probable that the specimen was not of 1 to 3000 value as is now required by the standards of the U. S. Pharmacopoeia. So far as the evidence could be ascertained the specimen had been stored in a small, cork-stoppered, green-glass bottle at the temperature of the laboratory since the date of manufacture and the

container had not often been opened. The other specimen was Armour's so-called insoluble pepsin which had been received from the manufacturers in July, 1909. Since its receipt it had been stored in its original container, a cork-stoppered bottle of amber glass, at the temperature of the laboratory. The bottle had been opened from time to time and about four-fifths of the contents used. At the time of sending the preparation, the manufacturer stated that it possessed a strength of 1–3000. The proteolytic strength was not verified at the time of the receipt of the specimen. The specimen used for comparison tests was Armour's "spongy granular, soluble" pepsin received from the manufacturer in May, 1919. The label claimed a strength of 1–3000 for the preparation.

The old laboratory specimen was a fine, cream-colored powder which was not noticeably hygroscopic. Its odor was not unpleasant, being similar to that of the specimen of recent purchase. Its taste was distinctly saline and somewhat bitter. The material was soluble in water, yielding a turbid solution which was strongly acid toward litmus paper. The ten-year old specimen was a greyish, somewhat lumpy powder. Its odor and taste were normal. The modern specimen was in the form of pale yellowish scales or granules.

Ash was determined by igniting a weighed quantity in a porcelain crucible, moistening the charred mass with a little ammonium nitrate solution, drying and again igniting. The very old specimen gave 48.8 percent of ash while the two more recent specimens gave, respectively, 4.14 percent and 3.01 percent of ash. As an average of several trials the proteolytic strength of the three specimens was found to be, respectively, 1–500, 1–2500 and 1–3000.

An examination was made to determine whether the literature contained reports of examinations of pepsin as old as the oldest specimen here studied, but no records were found. That a specimen nearly thirty-nine years old should retain any proteolytic activity is considered worthy of record.

LABORATORY OF THE AMERICAN MEDICAL ASSOCIATION.

THE LONGEVITY OF BACTERIA IN BOTTLED COMMERCIAL SPRING WATER.

BY MAUD MASON OBST.

The longevity of bacteria in natural waters after having been bottled for commerce does not seem to have been studied extensively. Many references are made in the literature to the longevity of significant individual bacteria in water under natural conditions. Sellards[1] states "Typhoid bacteria are neither harbored in lower animals, nor multiply in natural waters." Houston reports[2] "Outside the animal body the *B. coli* is usually known to be a decadent organism. At 20° C. it dies rapidly in both sea and tap water." Dunham[3] found that pure waters originally free from bacteria were contaminated mostly with chromogenic bacteria. Waters polluted with soil or vegetation contained *B. subtilis*, *B. my-*

[1] Sellards, "Water Bacteria," *Jour. Inf. Dis. Suppl.* No. 3, p. 41, 1907.

[2] A. C. Houston, "Significance of B. Coli in Water," *British Medical Journal*, No. 2699, p. 407, Sept. 1912.

[3] E. K. Dunham, "Value of Bacterial Examination from a Sanitary Point of View." *Jour. Amer. Chem. Soc.*, Vol. XIX, No. 8, p. 591, Aug. 1897.

coides, *B. figurans*, and organisms coming from the air. He also recorded the following data:

"One liter of distilled water inoculated with 1 Cc. of filtered suspension of *B. coli* contained an initial count of 42,971 per Cc. At the end of 24 hours the count was 14. One liter of distilled water enriched with 1 Cc. nutrient bouillon and inoculated as above, gave an initial count of 57,102 per Cc. at the end of 24 hours a count of 29,276. One liter of distilled water to which was added 1 Cc. hay infusion and *B. coli* as above had an initial count of 14,030 per Cc. and at the end of 24 hours a count of 439."

Streptococci and *B. coli*[4] introduced into tap water in the form of extract of feces died in a short time. Few of the streptococci survived more than two weeks, though the *B. coli* were still alive at the end of eleven weeks. The amount of organic matter introduced with the sewage, and the other kinds of organisms present were not stated.

Browne[5] studied the occurrence of organisms of the *B. coli* group in water into which he had introduced 1 gramme of fresh feces to 1 liter of water. *B. aerogenes*[6] is reported as being seldom found in stored waters and when present as indicating contamination from grain. When inoculated into water they decrease more rapidly than *B. coli*; 98 to 99 percent of both died off by tenth day.

In 1916 there were many samples of bottled water which had been stored for various lengths of time in the Bureau of Chemistry. Portions of the samples had been removed and bacteriological examinations made at the time of their receipt. The bottles, bearing identification numbers, had then been carefully sealed by the bacteriologist and stored without consideration of the conditions of light and temperature to which they might be exposed. In the summer and fall of 1916 a re-examination was made of all the water on which records of the previous examination were available. The standard methods prescribed by the American Public Health Association were followed in this work and confirmatory tests were made for *B. coli* whenever gas-producing organisms were found.

The results of the examinations of these samples are recorded as averages of the numbers obtained from all the individual bottles which connstituted one sample. (See Table 1.)

Sample No. 2 (Table 1) shows the uniformity of the counts obtained upon the individual bottles in the first examination. Each bottle contained a relatively high number of organisms, and this number is of the same magnitude for all of the bottles in this sample. Those samples which are bacterially clean generally vary much less than this, although occasionally one of four or six bottles may contain hundreds of bacteria when the remainder have less than 20 per Cc. Sample No. 23 (Table 1) was one of two out of 40 samples examined which showed an ap-

NOTE.—The writer is indebted to W. W. Skinner, in charge Water Laboratory, Bureau of Chemistry, for the use of the chemical data included in this paper and for many helpful suggestions.

[4] W. G. Savage and D. R. Wood., "Vitality and Viability of Streptococci in Water," *Jour. of Hygiene*, 16, No. 3, 227. 1917.

[5] W. W. Browne, "Predominance among the Members of the *B. coli* Group in Artificially Stored Water," *Jour. Inf. Dis.*, 17, No. 1 72–78, 1915.

[6] C. E. A. Winslow and B. Cohen, "Viability of *B. coli* and *B. aerogenes* Types in Water," *Jour. Inf. Dis.*, 23, No. 1, 82, 1918.

preciable variation in the counts at 25° C. In the routine work of the laboratory striking irregularities have been noted in the results obtained from imported samples which have naturally been bottled for some time before being examined.

TABLE I.—DETAILED RESULTS OF THE RE-EXAMINATION OF COMMERCIALLY BOTTLED WATERS AFTER PERIODS OF STORAGE.

Sample No.	Date of Examination First.	Second.	No. of days in storage.	Bottle No.	Bacteria per cubic centimeter developing on Gelatin at 25° C. 1st exam.	Gelatin at 25° C. 2nd exam.	Nutrient agar at 37° C. 1st exam.	Nutrient agar at 37° C. 2nd exam.	Gas-producing bacteria present in Cc. 1st exam.	Gas-producing bacteria present in Cc. 2nd exam.
2	2-19-13	11-17-16	1,357	1	3,700	0	900	0	1.0	*b*
				2	5,100	4	2,400	0	1.0	*b*
				4	28,200	3	11,500	3	0.1	*b*
				5	11,000	2	4,000	7	1.0	*b*
				6	68,000	31	12,000	20	0.001	10.0
Averages					23,200	8	6,160	6	++	*a*
23	3-17-15	11-8-16	607	1	9,300	0	500	9	1.0	*b*
				2	37,000	60	270	9	0.1	*b*
				4	370	23	250	40	1.0	*b*
				6	290	170	220	720	1.0	*b*
Averages					11,690	63.2	310	194.5	+	0

"Experimental work† has shown that when certain types of mold infection are present in the water or in the cork, mold development may follow. In certain cases the cork becomes deeply infected with mold hyphae which fruit constantly. The spores drop into the water as they ripen or are washed into the water whenever the container is handled. Once in the water these forms germinate and produce little, submerged, colorless, cottony tufts of mycelium, which often remain sterile and in some cases finally die. In other cases, the mold spores float, develop into pin point colonies on the surface of the water, which produce considerable numbers of spores. Any living colony when the bottle is thoroughly shaken may provide a liberal seeding for cultures made from the sample. It is clear that, aside from the substance of the cork, the very small amounts of inorganic and organic matter present is quite carefully handled; waters and their containers can be utilized by certain species of molds."

"The cork, on the other hand, has shown itself to be one of the chief vehicles of mold contamination in bottled waters as in other bottled products. Examination of the stoppers from bottles long in storage shows clearly that the substance of the cork is regularly attacked by certain fungi, which, together with their products, contaminate the water.

"It would appear that this condition of the corks is a considerable factor in old and musty flavors in water, since diffusible by-products seem to be very quickly produced by many molds. Mold spores are occasionally found in considerable numbers in fresh water. These occasions are few and can usually be closely correlated with inspection data. As a rule in actual inspection practice, numerous mold colonies in cultures from commercial bottled waters are indicative of rather long storage."

As shown in Table 2, there were only two samples in which the counts actually increased during the periods of storage. In many samples *B. coli* survived for a long time. In several instances, where no molds were noted at the time of the first examination there were molds present when finally examined.

† NOTE.—The paragraphs upon molds in water were prepared by Dr. Charles Thom.

TABLE II.—RESULTS OF THE RE-EXAMINATION OF COMMERCIALLY BOTTLED WATERS AFTER STORAGE FOR VARYING LENGTHS OF TIME.
(Expressed in the Average for the Number of Bottles Examined.)

Sample No.	Date of Examination. First.	Date of Examination. Second.	No. of days in storage.	No. of bottles examined.	Bacteria per cubic centimeter developing on Gelatine 20° C. Total. 1st exam.	Gelatine 20° C. Total. 2nd exam.	Gelatine 20° C. Liquefiers. 1st exam.	Gelatine 20° C. Liquefiers. 2nd exam.	Nutrient Agar. 1st exam.	Nutrient Agar. 2nd exam.	Gas-producing bacteria present in Cc. 1st exam.	Gas-producing bacteria present in Cc. 2nd. exam.	Remarks.
1	10- 8-12	11- 6-16	1,490	4	5	Molds	....	..	4	Molds	+	0	Plates sterile except for molds
2	2-19-13	11-17-16	1,363	5	23,200	8	....	..	6,150	6	++	...	
3	12-30-13	11-17-16	1,053	3	66,000	360	....	..	16,900	12	++	(*a*)	
4	12-30-13	11-17-16	1,053	4	3,120	225	....	..	220	11	+	0	
5	2- 6-14	11- 6-16	1,004	6	5,390	5	....	..	200	1	++	0	
6	2-11-14	11-17-16	1,010	5	110	1	....	..	70	1	0	0	
7	4-27-14	11-10-16	928	4	970	Molds	....	..	50	Molds	0	0	Plates sterile except for molds
8	5-29-14	11-10-16	896	3	124,500	Molds	55	0	300	Molds	0	0	Plates sterile except for molds
9	5-29-14	11-17-16	903	8	6	Molds	....	..	2	Molds	0	0	Plates sterile except for molds
10	4-28-14	11-10-16	927	6	600	Molds	31	0	8	Molds	0	0	Plates sterile except for molds
11	5-11-14	11-10-16	914	3	115	Molds	....	..	1	Molds	0	0	Plates sterile except for molds
12	6- 2-14	11-10-16	892	3	1	315	....	..	2	165	0	0	
13	6-20-14	11-17-16	881	6	7,850	225	1,330	0	1,030	23	++	2+	
14	6-23-14	11-17-16	878	6	7,850	490	....	..	990	225	++	0	
15	10-10-14	11- 8-16	759	5	21,500	970	350	0	3,100	515	++	+	
16	11-14-14	11-16-16	733	5	340	2,100	13	0	900	920	++	0	
17	10-31-14	11- 8-16	739	6	178,000	9	....	..	190,000	7	0	0	2 bottles showed molds
18	12- 7-14	11- 6-16	689	3	4	(*b*)	4	..	7	(*b*)	0	0	
19	1-23-15	11-16-16	662	6	1,570	125	125	0	2,500	9	++	0	
20	2-24-15	11-16-16	630	5	48,000	14	190	0	4,150	115	++	(*a*)	
21	3-23-15	11-16-16	605	6	12,000	105	2,150	0	16,500	28	+	0	
22	3-17-15	11- 8-16	602	2	32,000	34	400	0	22,000	50	++	(1.0)	
23	3-17-15	11- 8-16	602	4	11,700	63	....	..	310	195	++	0	
24	5- 3-15	11-14-16	562	6	3	0	....	..	1	0	0	0	
25	5- 4-15	11- 6-16	551	4	25,000	265	645	0	3,450	96	++	(1.0)	
26	5-25-15	11-10-16	534	4	53	14	....	..	290	6	0	0	
27	5-22-15	11- 6-16	533	5	3,500	0	14	0	138	0	+	0	
28	6-14-15	11- 6-16	544	6	8,900	13	500	0	26,500	47	+	(*a*)	
29	6-23-15	11-10-16	539	8	9,500	64	410	0	580	38	++	+	
30	7-16-15	11-14-16	487	3	800	4	26	0	325	4	0	0	
31	7-17-15	11-14-16	486	5	555	18	175	0	54	18	0	0	
32	7-19-15	11-16-16	486	2	6,500	85	100	0	32,500	122	+	+	
33	7-27-15	11-14-16	476	9	.....	....	....	..	60,000	240	++	++	
34	7-31-15	11-10-16	468	11	4,600	225	265	0	5,500	190	+	0	
35	8- 9-15	11-14-16	463	9	.....	....	....	..	32,000	200	++	0	
36	2-28-16	7-24-16	147	8	0	0	0	0	1	0	0	0	
37	2-29-16	7-24-16	146	6	2,900	58	0	0	6,000	41	+	0	
38	3-14-16	7-24-16	132	11	9,700	81	10,000	0	18,000	60	0	0	
39	3-16-16	7-24-16	130	8	43,000	31,000	0	28	11,000	2,200	++	+	
40	4- 5-16	7-24-16	110	6	2,600	38,000	100	0	138	60,000	0	0	(*C*) Many micrococci

It would be expected that the number of days which a specific water remained in storage would have a marked effect upon the numbers of bacteria present. This is proved to be true by a comparison of samples numbered 2, 13, 14, 15 and 23. These are all samples shipped from one spring in interstate commerce. A proportional difference is shown in the counts obtained after incubation at 37° C., the decrease being greatest on the water which has been stored the longest. After nearly two years' storage (samples 13 and 14) this water still showed an undesirable number of bacteria for a bottled water, and an excessive number of gas-producing organisms.

TABLE III.—PRELIMINARY EXPERIMENT.

Water "C."—Inoculated with *B. coli* on 1–10–16.

Date examined.	No. of days stored.	Total counts on bottle numbers (per Cc.) A.	B.	C.	D.
1–10–16	0	2,000	100,000	600	400
1–12–16	2	2,300	110,000	540	370
1–14–16	4	1,900	90,000	390	300
1–19–16	9	1,800	70,000	400	310
1–28–16	18	1,600	76,000	350	290

Water "C."—Inoculated with *B. coli* on 1–14–16.

Date examined.	No. of days stored.	Total counts on bottle numbers (per Cc). A.	B.	C.	D.
1–14–16	0	1,300,000	3,000,000	2,100,000	1,600,000
1–17–16	3	1,400,000	3,000,000	2,000,000	1,200,000
1–28–16	14	1,200,000	2,700,000	1,700,000	1,300,000

Water "B."—Inoculated with *B. coli* on 1–10–16.

Date examined.	No. of days stored.	Total counts of bottle numbers (per Cc.) A.	B.	C.	D.
1–10–16	0	4,000	10,000	7,000	6,000
1–12–16	2	4,000	10,000	5,900	5,400
1–14–16	4	2,700	7,000	5,000	5,100
1–19–16	9	2,600	5,800	5,100	5,000
1–28–16	18	2,100	5,000	4,700	4,300

The samples (Table 2) which gave high averages of bacterial counts after storage for several months were shown by chemical analysis* to be relatively high in total solids, including a variety of elements in calculable quantities. Aside from waters with relatively high total solids, these examinations showed no multiplication of bacteria during periods of storage but ordinarily a marked reduction. This indicates that the number of bacteria reported as present when commercial samples, and especially imported ones, are received in the laboratory are always less, rather than more than the number present in the water at the time of bottling.

A commercially bottled water which had been condemned as unfit for drinking was stored in the bottles to ascertain the practicability of attempting to purify polluted waters in this way. It was held from December 4, 1914, to April 17, 1915. During this time there was no marked decrease in the total counts of bacteria. The *B. coli* in those bottles held at room temperature did not decrease. It is probable that the temperature of the room was much less than it would have been in

* NOTE.—Analyses were furnished by the Water Laboratory of the Bureau of Chemistry.

summer, and if the water had been stored during the warmer months, the change in the bacterial content might have been slightly more marked. The bottles of this water which were stored at 36° F. showed no change in the numbers of bacteria. A decrease in the bacterial count was observed in a few bottles which stood in the direct sunlight for four weeks. There appeared to be no difference in the effect of using brown glass or colorless glass bottles. *B. coli* were present in 0.1 Cc. quantities in several bottles at the time of the last examination.

TABLE IV.
Water "A."

Inoculated with	Date examined.	No. of days stored.	Average number of organisms per Cc.[1] from bottles stored at 20° C.	Average number of organisms per Cc.[1] from bottles stored at Room temperature
B. dysenteriae	4–27–16	0	6,550,000	1,350,000
	4–29–16	2	4,150,000	465,090
	5– 2–16	5	(1 bottle) 20	(3 bottles) 83.3
	5–15–16	18	0	0
B. typhosus	4–14–16	0	1,592,500	1,383,000
	4–18–16	4	Less than 1,000	3,428
	4–21–16	7	(1 bottle) 340	(2 bottles) 520
			Others less than 1 per Cc.	
B. coli	4–27–16	0	99,750,000	16,700,000
	4–29–16	2	47,600,000	99,213,333
	5– 4–16	7	7,825,000	1,405,222
	6–11–16	45	Less than 10	Less than 100
	6–21–16	55	.....	.....

No bottle contained gas-producing organisms in 10 Cc. quantities.

Chemical Constituents (Hypothetical Combinations).

	Mg. per liter.
Sodium chloride	6.6
Sodium sulphate	0.5
Magnesium sulphate	11.7
Magnesium bicarbonate	36.9
Calcium bicarbonate	283.2
Silica	12.4
Total	351.3
Ammonia, free	.012
Ammonia, albuminoid	.060

Mixed flora introduced by adding sewage to bottled waters has been referred to in the literature cited above, although little work has apparently been done with known mixtures. No reference was found regarding the action of pure cultures of specific organisms in spring waters containing known chemical constituents. Water possessing the following characteristics were, therefore, used in experiments with pure cultures of organisms:

(A) High in mineral salts, and low in organic matter.
(B) High in both mineral salts and organic matter.
(C) Medium high in both mineral salts and organic matter.
(D) Very low in both groups of constituents.

[1] All samples were incubated on nutrient agar 2 d. at 37° C.

The waters were collected directly from the springs either by the bacteriologist or by a Food and Drug Inspector under special instructions. They were sent to the laboratory in Washington, in sealed, 5-gallon carboys. There the water was transferred to colorless 1-liter, glass-stoppered bottles, which had been previously carefully washed, rinsed with distilled water and then with the water with which they were to be filled. The water was sterilized in these small bottles under pressure. The water high in carbonates was sterilized in bottles filled very full, and with the stoppers firmly tied in place to prevent the precipitation of the carbonates.

TABLE V.
Water "B."

Inoculated with	Date examined.	No. of days stored.	Average number of organisms per Cc.[1] from bottles stored at 20° C.	Average number of organisms per Cc.[1] from bottles stored at Room temperature.
B. typhosus	6–23–16	0	26,375,000	5,037,000
	6–26–16	3	12,050,000	3,412,500
	6–30–16	7	3,900,000	423,750
	7– 7–16	14	162,750	21,183
	8–31–16	69	866	0
B. coli	6–15–16	0	39,750,000	23,400,000
	6–17–16	2	31,250,000	16,350,000
	6–21–16	6	15,000,000	4,210,000
	8–31–16	77	966,666	449,100
	11–3–16	141	343,333	17,755

Chemical Constituents (Hypothetical Combinations).

	Mg. per liter.
Sodium nitrate	5621.0
Sodium chloride	2604.0
Magnesium chloride	1349.0
Magnesium sulphate	17517.0
Calcium bicarbonate	1408.0
Ferric oxide alumina	8.0
Silica	22.0
Total	29126.0

In preparing the cultures of bacteria for inoculation, transfers were made in standard nutrient bouillon for three successive days and from the last 24-hour culture in this medium streaks were made upon several nutrient agar slants. These were incubated at 37° C. for 36 hours. Then the surface growth was removed by adding a few cubic centimeters of sterile distilled water and loosening the growth beneath this water with a heavy platinum loop. If any agar was taken up in this way with the growth, it was easily discernible, and the tube was discarded. The liquid containing the bacteria from all the tubes was combined in a sterile flask, thoroughly shaken with glass shot, and finally transferred to the sterile spring water. The water was at once tested for contaminations and if the bottle was found to contain any but the organism with which it had then been inoculated, it was discarded. This method of inoculation may have introduced very small quantities of food material, and many clumps of bacteria. The clumps,

[1] All samples were incubated on nutrient agar 2 days at 37° C.

however, were broken apart as much as possible by shaking the bottles vigorously. Whenever samples were to be removed the bottles were inverted and shaken 25 times through an excursion of 1 foot. In order to reduce errors further, a number of bottles were used in each experiment and the results upon which the discussion is based are the averages of the counts of bacteria obtained from four or more bottles.

TABLE VI.

Water "C."

Inoculated with	Date examined.	No. of days stored.	Average number of organisms per Cc.[1] from bottles stored at 20° C.	Average number of organisms per Cc.[1] from bottles stored at Room temperature.
B. dysenteriae	4–14–16	0	7,750,000	3,532,000
	4–15–16	1	6,092,500	3,940,000
	4–18–16	4	516,666	6,250
	4–21–16	7	0	0
B. typhosus	4–14–16	0	5,250,000	1,772,000
	4–18–16	4	5,425,000	1,960,000
	4–21–16	7	20,300	66,300
	6–11–16	58	0	0
B. coli	2– 8–16	0	8,050,000	1,474,000
	2– 9–16	1	8,550,000	1,676,000
	2–11–16	3	8,025,000	1,922,000
	3– 8–16	29	6,975,000	753,000
	4–16–16	76	.....	88,000
	4–18–16	78	1,612,500	.....
	6–11–16	132	.....	12,650
	6–15–16	136	902,500	.....
	8–31–16	213	480,000	208.3
	11–2–16	276	21,533	17.5

Chemical Constituents (Hypothetical Combinations).

	Mg. per liter.
Magnesium chloride	9.4
Magnesium bicarbonate	70.3
Calcium sulphate	1317.9
Calcium bicarbonate	139.6
Total	1537.2
Ammonia, free	.016
Ammonia, albuminoids	.120

Four bottles of each set were stored in an electrically regulated 20° C. incubator, and ten bottles at room temperature in the dark. Counts and identifications were made each time of examination to prove that the original organism of inoculation was still present in condition to grow on culture media.

A preliminary experiment was carried out to determine the best degree of inoculation. Two waters, both fairly rich in organic matter were given heavy and light inoculations with *B. coli*. The results are recorded in Table 3. No noticeable difference was found. It was decided to give all of the water a fairly heavy inoculation hoping it might thus be made uniform.

[1] The samples were incubated on nutrient agar 2 days at 37° C.

TABLE VII.
Water "D."

Inoculated with	Date examined.	No of days stored.	Average number of organisms per Cc.[1] from bottles stored at 20° C.	Room temperature.
B. dysenteriae	2–19–16	0	3,450,000	739,000
	2–21–16	2	330,000	184,500
	2–23–16	4	900	64
	4– 8–16	49	All bottles sterile	
B. typhosus	2– 1–16	0	207,500	270,100
	2– 3–16	2	292,500	200,333
	2– 5–16	4	120,250	126,200
	2–14–16	14	10,000	82,750
	2–16–16	16	Contaminated	63,100
	3– 8–16	37	.....	630
	4– 8–16	67	.....	0
B. coli	1–29–16	0	1,665,000	2,380,000
	1–31–16	2	1,270,000	1,228,000
	2– 2–16	4	647,500	616,400
	2–14–16	16	95,000	718,888[2]

Chemical Constituents (Hypothetical Combinations).

	Mg. per liter.
Potassium chloride	0.80
Sodium nitrate	2.43
Sodium chloride	1.35
Sodium sulphate	2.89
Sodium bicarbonate	1.46
Magnesium bicarbonate	10.63
Calcium bicarbonate	21.37
Ferrous bicarbonate	1.78
Silica bicarbonate	35.07
Total	77.78
Ammonia, albuminoid	0.005
Nitrogen as nitrates	0.400

DISCUSSION OF RESULTS.

Three waters were inoculated with *B. dysenteriae* from a culture furnished by the Hygienic Laboratory of the U. S. Public Health Service. It was inoculated in numbers varying from 120,000 to 16,000,000 per Cc. These organisms decreased rapidly during the first two days of storage, and in most cases by the end of 5 days there were less than 1 per Cc. remaining alive. In the water described in the tabulation as "C," the *B. dysenteriae* remained alive in appreciable numbers after four days' storage at 20° C., but at the end of seven days they were nearly all dead.

B. typhosus did not apparently multiply in any of the waters. Counts on this organism showed, in waters "D" and "C," averages which increased between the first and second examinations from 207,500 to 292,500 and from 5,250,000 to 5,425,000 per Cc. There was nothing, however, to indicate that these increases were due to contamination, or to multiplication. It is evident that they may have been due to the breaking apart of clumps of bacteria which were not separated at the

[1] The samples were incubated on nutrient agar for 2 days at 37° C.

[2] Several bottles became seriously contaminated before the next examination. At that time (3–8–16) nearly all of the bottles contained millions of bacteria but no *B. coli*.

time of inoculation. After the second examination the *B. typhosus* decreased rapidly in numbers. In water "D" the numbers were greatly decreased at the end of 14 days' storage at both temperatures. In water "C" they were reduced from an average of 5,250,000 to an average of 20,300 within 30 days, and 28 days later there were practically none. In waters "C" and "D" this organism decreased more rapidly at 20° C. than at room temperature. In water "B" large numbers survived at 14 days' storage and some remained alive at 20° C. for 68 days. Water "A" seemed to possess a mild germicidal action. *B. typhosus* survived in it less than four days, except in three of the fourteen bottles which showed an average of 500 organisms per Cc. after 7 days. This water showed the same effect upon *B. coli;* they were all dead at the end of 45 days, or before June 11th. It is noteworthy that no bottle of this water showed any form of contamination, although 3 bottles were left unstoppered in the laboratory for six hours in an effort to contaminate them. Repeated examinations of routine samples of this water seldom showed many bacteria. This water contains a moderate amount of mineral matter comprised mostly of magnesium and calcium bicarbonate (see chemical data) and very little organic matter.

The average counts of the *B. coli* show only water "C" to have given upon the second examinations an increase over the numbers present at the time of the first examination. In this instance this increase is at 20° C. from 8,050,000 to 8,550,000 and at room temperature from 1,474,000 to 1,676,000. The same water, examined two days later showed a decrease at 20° C. and a slight increase at room temperature. It may be possible that if the increase was not due entirely to the shaking apart of the clumps, it may have been aided by a single subdivision of part of the bacteria after inoculation. Possibly it was the completion of subdivisions which had been started before the removal of the bacteria from the agar. There were, however, not sufficient increase to warrant the conclusion that either *B. coli* or *B. typhosus* multiplied in the bottled spring water.

The two waters "A" and "D" which were low in organic matter did not support the pure cultures of bacteria as long as waters "B" and "C." Water "D," containing very small quantities of either organic or inorganic compounds apparently had little effect upon the bacteria but harbored them till they died. Water "A" seemed to contain some element slightly germicidal. Waters "B" and "C" did not induce any increase in numbers of bacteria but did sustain them for a comparatively long period.

In some cases when the bottled water became contaminated with bacteria from the air the *B. coli* remained alive longer than in the uncontaminated water. Other proof of this is shown in the re-examination of stored commercially bottled water. The air contaminations consisted of two forms of micrococci, one forming a small, white pin-point colony, and the other a yellow colony on nutrient agar. The former multiplied with great rapidity in the bottled waters.

CONCLUSIONS.

1. Water can be stored in bottles so that contamination will not enter.

2. A re-examination of a stored bottled water within 30 days may, or may not give the same total count as the first examination, but it is improbable that the *B. coli* will ever be found to have increased.

3. Pollution can be detected in a bottled water even after three years of storage. Such water may not be safe to use for drinking purposes.

4. The presence of certain salts seems to aid the longevity of bacteria in commercial waters, while the presence of other salts seems to have the opposite effect.

5. The presence of molds in large numbers in a bottled water suggests storage.

6. *B. coli*, in symbiosis with water bacteria, may live in bottled spring waters for several years. It is not safe to assert that *B. typhosus* and others of these groups will not survive long periods of storage under symbiotic conditions.

7. *B. coli, B. dysenteriae* and *B. typhosus* in pure culture did not multiply when inoculated into sterilized bottled spring waters.

8. *B. typhosus* was obtained alive from spring water "B" after inoculation and two months' storage.

9. *B. dysenteriae* remained alive from four to five days in pure culture in spring waters, "A," "C," and "D."

10. From the results obtained with water "A" it is indicated that certain chemicals in natural spring waters may inhibit the existence of bacteria.

11. A steady decrease in the numbers of the inoculated bacteria was evident in waters "B," "C," and "D." This decrease was more rapid in water "D," which was low in both organic and inorganic matter than it was in waters "B" and "C," which contained, respectively, large and medium quantities of organic and inorganic matter.

SOME SUGGESTIONS FOR NATIONAL FORMULARY REVISION.*

BY WILBUR L. SCOVILLE.

Comments on National Formulary preparations since the advent of the Fourth Edition have been very meagre. This is probably due more to war conditions, the diverting of attention, and the restrictions placed upon materials, as well as upon time and men for experimenting than to a special satisfaction with the National Formulary. Thus we have come to the time for appointment of a new revision committee, and our pharmaceutical literature offers but few suggestions for improvement. The following may be of help in getting work started, and are offered with this in mind:

Compound Elixir of Glycerophosphates precipitates on standing. Glycerin does not help this, and the amount of glycerin in the preparation might be reduced without detriment in this respect, though not without detriment to the taste. Probably more acid is needed.

Emulsions.—Nearly all commercial emulsions are made to contain tragacanth as well as acacia, in order to preserve homogeneity in appearance. Those pharmacists who make their own emulsions probably make some weeks' supply at a time, and this factor is of advantage to them. A small amount of tragacanth prevents the formation of layers in the emulsion for a considerable time, and in some instances adds to palatability.

Solution of Aluminum Subacetate is directed to be adjusted to a definite specific gravity. Such adjustments are difficult to make and not in accord with the usual methods. Adjustment to a definite volume, with a descriptive clause would be desirable.

Solution of Ferric Hypophosphite precipitates on standing. Glycerin again does not help. Probably more Sodium Citrate is needed.

Compound Solution of Phosphates also precipitates quite badly. Probably more acid is needed in this.

Liquid Petroxolin.—Complaints have been made that this does not always make a clear preparation. Experiments on the use of potassium or sodium hydroxide are desirable to learn whether more certain results are likely to follow than when stronger ammonia water is used. The present formula is probably satisfactory when the materials are standard, but it is not always practicable to get

* Presented to Section on Practical Pharmacy and Dispensing, A. Ph. A., New York Meeting, 1919.

stronger water of ammonia of full strength, and too much warming will further reduce this.

Syrup of Calcium and Sodium Hypophosphites precipitates on standing. Probably too much sugar is used.

Compound Syrup of Phosphates and Syrup of Phosphates with Quinine and Strychnine precipitates on standing. Since both of these are made from *Compound Solution of Phosphates*, this is probably the key to the difficulty.

Compound Syrup of White Pine and *Compound Syrup of Stillingia* both precipitate organic matter on standing. This kind of precipitation is not easily remedied except by a change in constituents. This may not prove to be practicable.

Antiperiodic Tincture also precipitates. This may be due to excessive acidity, and the use of another salt of quinine may reduce, or possibly inhibit, precipitation.

Stronger Tincture of Iodine.—Several complaints have been made that not enough potassium iodide is used to get all the iodine into solution.

Tincture of Vanilla.—The method of manufacture is unnecessarily complicated and wasteful. Direct percolation of the vanilla, either with or without the sugar makes just as good a preparation with much less trouble and expense.

A number of the N. F. preparations should be introduced to the "purity rubric" and have definite standards and methods of assay attached, if retained in the next edition. Among these are Caffeine Sodio-Salicylate, Extract of Jalap, Extract of Podophyllum, Fluidextract of Kola, Fluidextract of Jalap, Fluidextract of Sanguinaria, Solution of Iron of Albuminate, Solution of Iron Oxychloride, Solution of Iron Peptonate, Solution of Iron Protochloride, Solution of Strychnine Acetate, Magma of Ferric Hydroxide, Syrup of Calcium Iodide, Syrup of Codeine, Syrup of Iron and Manganese Iodide, Syrup of Ferrous Chloride, Syrup of Quinidine, Syrup of White Pine with Morphine, Tincture of Ferric Citrochloride, Tincture of Ferrated Extract of Apples, and Tincture of Jalap.

Whether it will be wise to standardize the pepsin preparations is debatable, since the conditions of permanency in solutions of pepsin are not yet known. But it is desirable to make the different liquid preparations of pepsin more uniform as to acidity. These have all been accepted as offered by independent authors, with such modifications as may have suggested themselves to the revisors. In consequence, they vary widely in acidity, and probably also in stability. The latter question should receive considerable attention in the next revision. Probably eight different liquid preparations of pepsin are more than needed, but uniformity in the chemical and physiological composition should be adopted in such as are retained.

Have abbreviations of the titles served any good purpose? If not, why encumber another book with them?

OINTMENT DIFFICULTIES.*

BY WM. GRAY.

In preparing ointments for a famous dermatologist, I have had trouble in trying to furnish a perfect preparation. Here is an example:

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New York meeting, 1919.

Acidum Boricum	15.0
Zinci Oxidum	10.0
Amylum	10.0
Bismuthi Subnitras	10.0
Oleum Olivae	30.0
Adeps Lanae Hydrosus	30.0
Liquor Calcis	30.0
Aqua Rosae	15.0

This preparation is called Cream Base No. 3. If you try to prepare it cold, it will not work, as you cannot incorporate all the liquids; if you apply much heat, you will have an ill-appearing mess. The trick is: after you have mixed all the ingredients to apply a very slight amount of heat. Stir constantly. Watch your preparation and at the psychological moment remove the heat and you will have a perfect preparation.

Diachylon Ointment is another bad actor. If you have to add some other ingredient to this ointment, when it is cold, it will break up into an unsightly mess. Even the act of stirring the ointment without any admixture does the same thing; that is, after the ointment has been standing a short time. Now, suppose you are called upon to add salicylic acid, phenol or some volatile oil to this ointment, you will have difficulty unless you apply a gentle heat, not enough to change the character of or volatilize the medicaments, but just enough to bring them to the proper consistency. Don't forget, heat is the answer!

THE DIAGNOSTIC LABORATORY IN THE PHARMACY.*

BY JACOB DINER.

SCOPE OF THE WORK.

Before beginning the planning of the laboratory one should carefully consider the scope of the work so as to plan intelligently how to arrange and equip the laboratory. It is entirely within the province of the up-to-date pharmacist to undertake the examination of urine, feces, blood, gastric and duodenal contents; to examine blood for malarial parasites, milk for bacterial contents as well as for adulteration and preservatives, exudates for gonococci, throat smears and cultures for diphtheria bacilli, sputum for tubercle bacilli, and cerebro-spinal fluids for globulin, copper-reducing substances and cell count as well as for bacteria. With reference to cerebrospinal fluid, however, we must bear in mind that many physicians are not familiar with the technic of lumbar puncture and they will therefore prefer to have the laboratory man perform that operation previous to examining the fluid. The procedure for obtaining spinal fluid by lumbar puncture, while relatively simple in the hands of a trained man, is fraught with many dangers to the patient when attempted by the inexperienced, and I doubt whether the pharmacist would legally be entitled to perform this operation. Similar objections may be raised against removal of blood from the vein of the patient for the purpose of performing the complement fixation test for gonorrhoea or syphilis. And even should the physician be willing to do that part of the work himself the preliminary steps necessary for carrying out the complement fixation

* Read before Section on Commercial Interests A. Ph. A., New York Meeting, 1919.

test, such as preparation of antigen, and amboceptor, securing complement from guinea pigs, and titrating these important reagents each time before beginning the actual test would entail so much labor, consume so much time, and prove so expensive as to be prohibitive for a casual execution of this work on a single specimen. On the other hand, the preparation of autogenous vaccines can be carried out successfully by the trained laboratory man and will prove remunerative from a professional as well as from a financial point of view.

The following prices indicate the charges usually made for clinical and diagnostical work:

URINE	
Qualitative Chemical and Microscopical	$ 1.00
Quantitative Chemical and Microscopical	3.00
Nitrogen Partition	10.00
BLOOD.	
Red and White Cell Count and Haemaglobin, each	2.00
Differential Leucocyte Count	2.00
Complete Clinical Examination	5.00
Widal reaction	2.00
Plasmodia	2.00
Wassermann complement fixation	10.00
SPUTUM.	
T. B. or Pneumonia	2.00
FECES.	
Chemical or Microscopical	3.00
Bacteriological	10.00
GASTRIC CONTENTS.	
Chemical and Microscopical	5.00
SMEARS.	
Urethral, etc., for Gonococci	1.00
CEREBROSPINAL FLUID.	
Wassermann complement fixation	10.00
Noguchi Batyric Acid Reaction	3.00
Nonne Reaction	3.00
Cell Count	5.00
Bacteriological	15.00
VARIA.	
Autogenous Vaccines	10.00
Milk Analysis	5.00
Water Analysis	5.00
Tissue	5.00
Drug Assay, Food Analysis and other Chemical Analysis	
Quotations on application.	

LOCATION AND EQUIPMENT.

Inasmuch as we know what we wish to accomplish we can now intelligently plan our laboratory. In an article which appeared in the *American Druggist* some time ago, I gave a detailed plan for the arrangement, and it is not necessary to repeat it here. Generally speaking, the laboratory should be removed from the other departments of the pharmacy as far as possible. A room about 10 by 12 feet, well lighted by windows and electric light, preferably with northern exposure, should be the location of choice.

The equipment may be divided into four groups: 1. Glassware. 2. Reagents. 3. Implements. 4. Accessories.

GLASSWARE. Test-tubes, preferably of medium size and assuredly of good quality should be provided in abundance. Beakers of assorted sizes, porcelain evaporating dishes, Florence and Erlenmeyer flasks, a few distilling flasks and condensers, one of which at least should be a reflux condenser, microscopical glass slides and cover glasses of good quality, staining bottles of the drop-bottle variety, reagent bottles glass stoppered except those for alkalies, which latter should have rubber stoppers, a good supply of glass and rubber tubing and some stirring rods. A few extra large sized test tubes with thick walls for the purpose of constructing a Van Slyke apparatus should also be provided and, of course, a sufficient supply of urinometers, ureometers, pipettes and burettes, centrifuge tubes and Petri-dishes, the latter at least 1.5 cm. deep and 10–12 cm. wide.

REAGENTS. Stock solutions, as well as working solutions, of the following stains should be on hand: Carbol-fuchsin, carbol-gentian violet, Loeffler's alkaline methylene blue, aqueous solution of methylene blue, Gram iodine, acid-alcohol, acetone-alcohol, and Wright's blood stain. In addition to the stains the following reagents should be kept on hand, of course carefully titrated: N/10 NaOH N/10 H_2SO_4, N/10 HCl; 2% acetic acid, 36% acetic acid, glacial acetic acid, diluting fluid for red blood corpuscles such as Hayem's, or that devised by me and published in the *Journal of the A. M. A.*, Fehling's solution, Benedict's solution for quantitative determination of sugar, bromine solution for urea determination (Rice's formula), Obermeyer's solution, standard $AgNO_3$ (1 Cc. to equal 0.1 NaCl); uranium nitrate solution (1 Cc. to equal 0.005 P_2O_5), acetic mixture, barium chloride test solution, 10% butyric acid in normal saline, etc. Indicators: Neutral potassium chromate, litmus, methyl orange, Töpfer's, cochineal, alizarin, phenolphthalein.

IMPLEMENTS. If possible one should have a good polariscope; also electric centrifuge, test-tube racks and holders, electric incubator, electric hot-plate, platinum loops and needles. Hagedorn needles, Arnold sterilizers, dry, hot air oven, autoclave. The possession of a good microscope, with oil immersion lens and mechanical stage, is an absolute necessity.

ACCESSORIES. Bunsen burners, two- or three-ring gas burner, grommets, crucible tongues, funnels and supports for same, filter paper, double-boiler (rice boiler), test-tube brushes and bottle brushes, metal and horn spatulas, triangular file, glass-pencil (a wax pencil for writing on glass), slide boxes and labels.

With reference to all the items enumerated above would say that quality only should be the determining factor and while a sufficient supply should always be on hand overstocking must be carefully avoided. The chemicals needed, as a rule, are found in every well stocked pharmacy. The formulae for the different reagents can readily be obtained from any standard text-book.

TRAINING.

In order to intelligently carry out laboratory work for diagnostic purposes one should have a thorough training, both theoretical and practical. A systematic course in this work should be the first step. This should be followed by about 3 to 6 months' practical work in a laboratory connected with a hospital or one in

which such laboratory work is done on a fairly extensive scale, under the immediate supervision of a trained pathologist. Ardent collateral reading, both of text-books and modern medical literature, are an essential part of the training. And while it is by no means necessary for the laboratory worker to become a physician it will prove of great advantage if he learns to evaluate the laboratory findings and their relation to disease.

METHODS FOR PROCURING BUSINESS.

This may be subdivided under two heads: (*a*) Direct advertising; (*b*) Indirect advertising.

(*a*) DIRECT ADVERTISING: At the very outset one should acquaint the physicians in the community with the fact that the laboratory has been established, stating frankly the qualifications of the man in charge and enclosing a schedule of fees for the different types of examinations one is ready to carry out. Secondly: Cordial invitations should be extended to the medical profession to visit and inspect the laboratory. Thirdly: Proper containers should be provided for the collection of specimens by the physician. Fourthly: Monthly or bi-weekly pamphlets of a scientific nature should be mailed to each physician. Each pamphlet may show the relation of some phase of the laboratory work to diagnosis and, if possible, to prognosis.

(*b*) INDIRECT ADVERTISING: Painstaking and accurate work carefully performed and intelligently reported. A good equipment well maintained and always open for inspection. Willingness and desire, frequently expressed, to have the physician present while the work is being carried out.

For methods of analysis and collateral reading one is referred to Hawk's Biological Chemistry, Simon's Clinical Diagnosis, Todd's Clinical Diagnosis, Emerson's Clinical Diagnosis, Wood's Clinical Diagnosis, Ewing's Hematology, Hiss and Zinsser's Bacteriology, Jordan's Bacteriology, Park's Bacteriology, *The Journal of Laboratory and Clinical Diagnosis*, and many other good books and publications easily found if desired. I may also be permitted to refer to a rather detailed outline on the preparation of autogenous vaccines published in the JOURNAL OF THE A. PH. A., February, 1914, by myself, as well as numerous monographs on laboratory diagnosis published by me in various medical and pharmaceutical journals.

The advantages of a diagnostic laboratory in conjunction with a modern pharmacy are too evident to require discussion. The least of these is the direct financial return from the work and the increase in the prescription work arising from the added confidence of both the physician and the public. One of the more important returns worth considering is the broadening influence which such work is bound to have on the pharmacist and the added appreciation of the importance of the pharmacy as a valuable adjunct in the diagnosis and treatment of disease.

CLOSER AND MORE PROFITABLE RELATIONS BETWEEN THE PHARMACIST AND HIS BANK.*

BY CLARENCE O. BIGELOW.

At no time in the last decade or more has the pharmacist been beset with so many vexatious problems as confront him to-day. Conditions arising out of the

* Read before Section on Commercial Interests A. Ph. A., New York Meeting, 1919.

war, Federal and State legislation, together with regulations imposed by local boards, all have tended not only to perplex and harass him, but have raised a doubt in his mind as to whether we are not about entering upon another era quite as disturbing as was that immediately following the early days of the cut-rate evil, and the advent of the so-called chain-store, its natural sequence.

Troublesome though these things are, there is no question as to their being helpful and educative to the pharmacist. We shall gradually adjust ourselves to changed conditions, meet with equanimity whatever the future has in store for us in the way of legal requirements, and the chain-store, long regarded as a menace, will assuredly be looked upon ultimately as a direct blessing.

Up to about 1900 a drug store, even in the larger cities, doing a business of $150 to $200 a day, was a rarity, while to-day there are more stores taking in from $800 to $1,000, and over, than could boast of the smaller receipts twenty years ago. This is the result of many and diverse causes, chief of which is the natural effect consequent upon the departure from old-fashioned methods of merchandising, the reflex action of which has slowly but surely broken through the ethical, and found lodgment in the commercial side of Pharmacy. For this we owe much to the live pharmacists of the country and to the department store, but still more are we indebted to the trade journals and house organs, which for years have carried on a most comprehensive merchandizing propaganda.

The day of small sales and large profits is past. The pharmacist is now a man of larger affairs, and as such he should make the most of his opportunities, which admittedly are far greater than at any time within the recollection of the present generation. But is the pharmacist making the best use of his opportunities? Seemingly not. While the volume of drug store business has increased something like four-fold in recent years, and purchases have increased in like ratio, from reliable information the pharmacist has failed to finance his business in such manner as to ensure best results. He has unquestionably failed to utilize the facilities offered by his bank to the extent he should in providing ready cash to promptly meet maturing obligations, preferring rather to permit accounts to run to maturity thereby losing the cash discount offered by jobbers and manufacturers. This is a grave mistake, as has long been recognized and taken advantage of by business men in most other lines of trade.

When starting in business the pharmacist generally goes to a jobber and makes what should be, and no doubt is, a frank and truthful declaration of his financial affairs, upon which he expects to obtain a line of credit. It is just as important that he make a like statement to his bank. A pharmacist therefore may very profitably establish closer relations with his bank than those comprised in the mere depositing of money and drawing checks, etc.

In the majority of cases the supply houses grant extra discounts for payments in ten days, frequently 1 or 2 percent., and in some cases they make better prices to customers paying with prompt regularity, so that the ability to pay in cash, rather than let bills run to maturity, means a real saving in the original cost of goods and on a large turnover such savings will make a substantial addition to the year's profits.

For example, the pharmacist purchases $10,000 worth of goods per annum at the rate of $800 every month and he sells his goods either for cash or settle-

ment at the end of the month, which means 15 to 30 days' extra time to his customers, so that on the average he will have to wait 30 days before his money comes in. If he pays in ten days he will make a saving of $200 in discounts, and as he probably will not require more than $2,000 at any time to cover his payments while awaiting the return flow of money from his customers' account, the interest charged him by his bank at 6 per cent, if he should borrow constantly through the year, would still leave him a profit of $80.

In actual practice it will probably be necessary for him to borrow only twice or three times a year, for periods of two to three months, to cover his purchases until the proceeds of his accounts receivable return in sufficient volume to liquidate his loans, so that his average borrowing for the year will probably not exceed $1,000 to $1,500, on which the interest would be $60 to $90, leaving him a profit of $140 or $110, this profit of course increasing as the volume of his purchases increases and further increasing as he might be able to make a more rapid recovery of his accounts payable.

It would seem, therefore, that it would be profitable to borrow money from the bank for this purpose on the credit and assets of the business, if in the bank's opinion they offer sufficient security, or by furnishing security in the form of approved stocks, bonds or other acceptable collateral.

The main elements in procuring credit are capital, character and ability, and while character and ability are vitally necessary, the lack of capital may sometimes be compensated for by the high quality of the other factors.

Bearing all these facts in mind, it would seem as if pharmacists generally would find it decidedly to their advantage to discuss their affairs more fully with their banks, looking to the establishment of closer and more profitable relations.

CAMOUFLAGE.*

BY S. L. HILTON.

The following prescription is submitted as one that, under usual conditions, would likely be compounded without much question; on due consideration, however, the true intent can be readily discerned. This is an example of scientific thought to provide a method for obtaining narcotics. A morphine habitue would jump with joy to have possession of this prescription as a means for obtaining his supply of morphine, almost free from resins and gum, contained in tincture of opium.

℞ Plumbi Acetatatis.....ʒi
Tincturae Opii.....ʒiv

Misce, et signetur:—To be used as directed.

The addition of lead acetate to tincture of opium removes the resins and gum and only a portion of the lead goes into solution; this can readily be removed with diluted sulphuric acid, the solution filtered leaving a hydro-alcoholic solution representing 10 percent of opium, containing all of the alkaloids of opium.

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*Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New York City Meeting, 1919.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

ST. LOUIS.

A meeting of the St. Louis Branch, A. Ph. A., was held at the St. Louis College of Pharmacy, July 31, with a large attendance in spite of the excessively hot weather.

The address of the evening was given by Captain J. H. Sewing, a pharmacist and physician of St. Louis, who was captured and held as a prisoner in Germany. Captain Sewing told in a most interesting manner of his experience from the moment a fellow soldier informed him that they were "going to Berlin" to the time he reached the American line after the armistice. His narrative was given in a conversational manner, covering many little incidents in which everyone was interested. He described the hardships and cruelties inflicted on some of the prisoners. For a time he served as a physician in a German hospital. Captain Sewing dwelt on the drug market of Germany as he found it during the war. Coal-tar products were very plentiful and were used as freely as salt. Hydrogen peroxide was as available as water. Castor oil, however, and fats of all kinds were unobtainable for medical use or food. Following his address, the members asked many questions which led to his outlining his experience in Belgium and France while serving with the British army.

In the absence of the President and Vice-President, Dr. H. M. Whelpley occupied the chair during the business session. Officers were elected as follows:

President, Frantz F. Berg.
Vice-President, Burton H. St. John.
Secretary-Treasurer, Leslie E. Pritchard.
Member of the Council, J. Merner Noble.

The Branch unanimously voted to extend the American Pharmaceutical Association an invitation to hold the 1921 meeting in St. Louis.

The Committee on Membership, consisting of Messrs. F. F. Berg and J. Merner Noble, reported that nine applications for membership had been turned over to the treasurer.

The special program for the meeting of September 12 will include a report from the St. Louis members who attend the New York meeting of the American Pharmaceutical Association.

COMMITTEE REPORTS

REPORT OF THE COMMITTEE ON DRUG MARKET.*

(Continued from p. 673, August issue, JOURNAL A. PH. A.)

LANOLINE, ANHYDROUS: Anhydrous Lanoline has been a cause of some concern during the past year, the odor, amount of ash and reaction of ash in particular having tended to deviate from the U. S. P. requirements. Following is a detailed report on 13 of the lots examined, many of which were rejected:

* Presented to the 1919 Convention of the Pennsylvania Pharmaceutical Association at Buena Vista Springs, 1919.

Sample.	Acidity.	Ash.	Reaction of Ash.	All other U. S. P. Requirements.
1.....	Normal	Unweighable	Normal	Normal
2.....	Normal	0.234%	Alkaline	Normal
3.....	Normal	0.270%	Alkaline	Normal
4.....	Normal	0.062%	Normal	Normal
5.....	Excess	0.01%	Normal	Normal except negligible excess of chlorides
6.....	Normal	0.004%	Normal	Normal
7.....	Slight excess	0.09%	Normal	Normal except negligible excess of chlorides
8.....	Normal	0.041%	Normal	Normal except negligible excess of chlorides
9.....	Normal	0.600%	Alk.	Normal
10.....	Slight excess	0.14%	Alkali.	Normal
11.....	Slight excess	0.238%	Alkaline	Normal
12.....	Normal	0.44%	Alkaline	Normal
13.....	Slight excess	0.40%	Alkaline	Normal

Reported by G. E'WE.

LIQUOR FORMALDEHYDE: One lot was rejected because it was thick and gelatinous. It undoubtedly contained considerable paraformaldehyde.

Reported by J. G. ROBERTS.

LUPULIN: Nine lots assayed 44.9%, 45.2%, 53.9%, 57.7%, 60.5%, 63.0%, 63.7% and 64.3% ether-soluble matter, respectively. The U. S. P. 8th requires not less than 60%.

Reported by L. J. LIPMAN.

MAGNESIUM CARBONATE: Each of three lots examined contained an excess of calcium amounting to 0.94%, 1.24% and 1.32% calculated as calcium oxide.

Reported by J. G. ROBERTS.

MALE FERN: Three lots were not Male Fern but were other members of the fern family. Reported by G. E'WE.

MANGANESE DIOXIDE: Three lots assayed 66.2%, 70.1% and 70.3%, respectively, of Manganese Dioxide but were otherwise U. S. P. The U. S. P. requires not less than 80% Manganese Dioxide. Reported by F. J. KEENAN.

MANGANESE GLYCEROPHOSPHATE: One lot contained no citric acid as required by the N. F. and as a consequence was not as soluble as required by the N. F.

Reported by L. J. LIPMAN.

MERCURY CACODYLATE: One lot labeled "C. P." was not nearly completely soluble in water and therefore, was unsuitable for hypodermic tablets or ampul solutions. Another lot labeled simply "Mercury Cacodylate" gave reactions for mercury and cacodyl but contained about 25% of mercuric chloride. Reported by K. SUTO.

MERCURIC OXIDE, YELLOW: One lot was alkaline to litmus. Another lot was alkaline to litmus and alkaline to methyl orange equal to 0.072% sodium carbonate. A third lot was alkaline to litmus, neutral to phenolphthalein and alkaline to methyl orange equal to 0.949% sodium carbonate. The U. S. P. requires that yellow oxide mercury be neutral to litmus. This is an admirable requirement since this substance is employed largely in the treatment of the eye. Reported by G. E'WE.

MYRRH: One lot contained about 70% of another gum, and was rejected. Four lots assayed 25.7%, 25.8%, 33.4% and 38.7%, respectively, of alcohol-soluble matter. The U. S. P. requires not less than 35% alcohol-soluble matter. Reported by G. E'WE.

OIL ALMOND, EXPRESSED, NOT U. S. P.: A sample, so labeled, consisted of Oil Peach Kernels. Reported by K. SUTO.

OIL, BEAR: The following results were obtained with one lot:

Sp. Gr. at 15° C.....	.922
Saponification value.....	197
Iodine value.....	57

Reported by J. G. ROBERTS.

OIL CADE: One lot was not of U. S. P. quality as it responded to the U. S. P. test for rosin. Reported by F. J. KEENAN.

OIL CEDAR LEAF: Ordinary oil of cedar leaf as found on the market is said to be made indiscriminately from *Juniperus Virginiana, Thuja Occidentalis* and other related conifers, a fact which causes considerable variations in its analytical characters. Pure Oil of Cedar Leaf obtained from *Juniperus Virginiana*, has a specific gravity of .887 at 15° C and an optical rotation of +59° 25′.

The examination of three samples from various sources give specific gravities at 15° C. ranging from .9221 to .9256 and optical rotations ranging from +25.76° to +32.87°. All of these samples have higher specific gravities and lower optical rotations than the standard but they are closer than usual to it and probably contain less oil from the other portions of the tree.

Reported by J. G. ROBERTS.

OIL CHAULMOOGRA: The one lot examined had a Sp. Gr. at 45° C. of 0.907, iodine number 107, saponification number 185, acid number 11.4. There is no U. S. P. or N. F. standard. The British Pharmacopoeia gives standards for Chaulmoogra Oil. This lot did not conform to the British Pharmacopoeia standards. Reported by G. E'WE.

OIL GOOSE: One lot of good quality gave the following results:

Solidifying point	14° C.
Specific gravity at 15° C.	.921
Acid value	6.0
Saponification value	196.8
Iodine value	72.7

Reported by J. G. ROBERTS.

OIL LEMON, TERPENELESS: There is a great need for a standard for aldehydes, calculated as citral, for this product. The 12 lots examined varied as follows: 20.2%, 24.2%, 25.8%, 26.6%, 33.4%, 44.3%, 49.4%, 52.2%, 54.1%, 59.2%, 60.3% and 67.9% aldehydes, calculated as citral, respectively. Reported by G. E'WE.

PAPAIN: Continues to assay low and vary in activity. The 6 lots examined digested 1.33, 4.01, 9.48, 13.6, 14.0 and 14.6 parts of fresh lean beef, calculated on a dry basis, respectively. Reported by K. SUTO.

PAPAIN: There is probably no substance which has been subjected to as much adulteration and about which more conflicting statements have been made than Papain. Among the adulterants that are known to have been added are bread crumbs, rice, flour, dextrin, congee and wild cactus milk. Positive identification of some of these substances is very uncertain so that it is possible, in some instances, for unscrupulous dealers to dispose of adulterated goods without detection. One sample was rejected because it was of suspicious quality. We were unable to detect any adulterants but it had the property of readily absorbing water which rendered it gummy and unfit for powdering. Reported by J. G. ROBERTS.

PHENOL: The rejection of a two-drum lot was recommended because it was of poor appearance. One drum was quite dark colored while the other was both dark and dirty.

Reported by J. G. ROBERTS.

PHENYL SALICYLATE: One sample was considered of unacceptable quality because of a yellowish color. Reported by J. G. ROBERTS.

PILOCARPUS: Two broker's samples were submitted, each of which contained about 22% of stems. As the U. S. P. permits not more than 5% it was considered that the quantity present was in considerable excess. They were entirely satisfactory in regard to alkaloidal content as they contained, respectively, 0.92% and 0.76%, which amounts are well above the U. S. P. limit of not less than 0.6%. Reported by J. G. ROBERTS.

PIPSISSEWA: Two lots contained 38% and 50%, respectively, of stems and fruits, whereas only the leaves are desired. A third lot was largely stems. The N. F. limits stems and fruits to not more than 5%.

One lot was *Chimaphila maculata*, whereas the N. F. specifies *Chimaphila umbellata*.

Reported by G. E'WE.

POPPY HEADS: It was found necessary to reject five of the thirteen cases in one lot because the contents were in a mouldy condition. Reported by J. G. ROBERTS.

POTASSIUM CARBONATE: A sample submitted by a broker did not comply with the U. S. P. requirements as it was 3% low in strength, contained an excess of heavy metals and was insufficiently soluble in water. The U. S. P states that Potassium Carbonate is soluble in 0.9 part of water; this sample was not soluble in this amount but required about three parts to dissolve the greater portion. The rest appeared to be insoluble as the addition of several more portions did not give a clear solution. Reported by J. G. ROBERTS.

POTASSIUM PERMANGANATE: The rejection of two lots was advised because they were 2.3% and 1.07%, respectively, low in strength. Reported by J. G. ROBERTS.

One lot was a trifle low in strength, namely 98.4%, whereas the U. S. P. requires 99%. It also contained an excessive proportion of insoluble matter rendering it unsuitable for compressed tablets to be used in the preparation of solutions. Reported by G. E'WE.

PULSATILLA: One lot consisted of only the tops, whereas the whole dried herb is used. Reported by P. COHN.

RED GUM, AUSTRALIAN: One lot was practically insoluble in water. It contained no water-soluble tannin. It was soluble in alcohol to the extent of 94.5%. This lot had evidently been previously exhausted with water. Australian Red Gum should contain 40–50% of water-soluble tannin. This lot was rejected. Reported by G. E'WE.

RENNIN: The five lots examined assayed 1 : 15,625, 1 : 25,000, 1 : 25,000, 1 : 30,000 and 1 : 37,500, respectively. They were all satisfactory except the first one. Reported by K. SUTO.

RUE: One lot so labeled contained no rue but consisted of the crushed leaves of *Rhus copalina* with traces of the pellucid glandular leaves of a second species which consisted of an unidentified heath. Reported by G. E'WE.

SAFFLOWER, AMERICAN: One lot was so old and faded that it would yield a poorly colored fluid extract and was rejected, as a consequence. Reported by G. E'WE.

SANGUINARINE NITRATE: A great improvement has been effected in this product during the past year. Whereas in previous years low strength and great variation was the rule, in the past year the four lots examined all assayed between 99.8–100.0% pure sanguinarine nitrate. Reported by L. J. LIPMAN.

SARSAPARILLA: Two lots contained excessive stem structure adhering to the roots. Reported by G. E'WE.

SASSAFRAS BARK: Two lots contained 20% and 22% respectively, of whole roots. A third lot was mostly not deprived of the periderm as required by the U. S. P. Reported by P. COHN.

SCAMMONY RESIN: One lot assayed 85.0% ether-soluble matter and 1.38% ash but was otherwise of U. S. P. quality. Another lot assayed 84.0% ether-soluble, gave an unweighable ash and was otherwise of U. S. P. quality. The U. S. P. requires not less than 95% ether-soluble matter and not more than 1% ash. Reported by G. E'WE.

SCOPOLA ROOT: The alkaloidal content of one lot was a little low as it contained only .47%. Reported by J. G. ROBERTS.

SCULLCAP: One lot contained only a trace of official scullcap. It contained a small proportion of *Scutellaria canescens*, a species related to the official drug, but consisted mostly of *Trichostema dichotomum*. Reported by G. E'WE.

SAPO MOLLIS, U. S. P.: Practically all of the many lots examined were neutral or possessed a negligible acidity whereas the U. S. P. requires an alkalinity equivalent to not less than 0.1% potassium hydroxide. It seems impractical to meet the U. S. P. requirement of minimum alkalinity. The explanation offered by a soap manufacturer is that soft soap may be alkaline in great excess of the U. S. P. upper limit when first prepared, because of incomplete saponification and later became neutral due to completion of the saponification. Reported by G. E'WE.

SOAP, CASTILE: The rejection of a lot represented by one sample was advised because its iodine value was only 68.7 whereas the U. S. P. standard requires it to be not less than 84 nor more than 90.

Two other samples having iodine values of 81 and 82.5, respectively, were examined. This seems to be a prevalent condition as almost without exception the iodine values of other samples are lower than the U. S. P. minimum limit. Samples of a well established and reliable

brand of Castile Soap obtained at various times have been found to have the following iodine values: 81.79, 82.28 and 79.36. These results indicate that the U. S. P. limit is too high particularly in view of the fact that the minimum limit for olive oil from which it is made is only 79.

Reported by J. G. ROBERTS.

SODIUM BENZOATE: One lot was not of U. S. P. quality because it was only 96.1% pure.

Reported by J. G. ROBERTS.

SODIUM SULPHATE: Sample was slightly acid to litmus instead of neutral as required by the U. S. P.

Reported by J. G. ROBERTS.

SPIGELIA: The examination of four samples showed that not one of them was of U. S. P. quality. One sample was practically all Ruellia. Another contained about 21% stems and other foreign matter and about 29% dirt, showing that it contained about 50% of true Spigelia. One lot contained about 5% excess of stems, while another was practically of U. S. P. grade as it had only 1% excess of stems.

Reported by J. G. ROBERTS.

One lot contained excessive soil and stones.

Reported by G. E'WE.

ST. JOHN'S WORT: A lot of ground "St. John's Wort" consisted of a mixture of innumerable plants, grasses and other botanical specimens in a finely ground condition. Botanical examination failed to reveal more than a trace of St. John's Wort. This lot of drug was offered by a jobber who maintains no scientific control over his botanical supplies and evidently this lot of "St. John's Wort" was foisted upon him by another dealer. This lot was rejected.

Reported by G. E'WE.

STILLINGIA ROOT: One lot was wormy and mouldy to the extent of 70–80% and was rejected.

Reported by G. E'WE.

STRAMONIUM LEAVES: Three lots were found to contain 0.36%, 0.33% and 0.43%, respectively, of mydriatic alkaloids which amounts are all well above the U. S. P. limit of not less than 0.25%.

Reported by J. G. ROBERTS.

STROPHANTHIN: The U. S. P. requires Strophanthin to be very soluble in water. Two lots were not very soluble since even minute quantities dissolved very slowly but completely.

Reported by G. E'WE.

STYRAX: The four lots examined yielded the following results:

Sample.	Ash.	Insol. matter.	Non. vol. alc. sol.	Acid value.	Sap. val.	All other U. S. P. tests.
1....	0.42%	1.56%	Normal	99.9	189	Normal
2....	0.01%	1.43%	87.9%	117.6	198.5	Normal
3....	0.08%	2.17%	74.0%	150	196	Normal
4....	0.55%	2.20%	75.0%	114	193.1	Normal
U. S. P. requires	not more than 1%	Not more than 2.5%	Not less than 60%	56–85	170–230	Normal

Nos. 3 and 4 were labeled "artificial."

Reported by G. E'WE.

TOLU: The U. S. P. requires that Tolu be "soluble in alcohol" but sets no standard for the accidental impurities always present in a natural product. The seven lots examined contained 0.5%, 1.0%, 1.3%, 1.8%, 2.1%, 3.43% and 5.8% alcohol-insoluble matter, respectively. They answered all other U. S. P. requirements.

Reported by G. E'WE.

TRITICUM: Bermuda Grass has been frequently offered as a succedaneum for Triticum during the past year, but of course, cannot be used in a preparation labled as containing Triticum.

Three lots of Triticum were not Triticum but *Cynodon dactylon* (a related grass).

Reported by G. E'WE.

WAHOO BARK: One lot consisted of the whole root.

Reported by G. E'WE.

WATER PEPPER: One lot consisted almost entirely of stems whereas the whole herb is desired.

Reported by G. E'WE.

WATER, ROSE, STRONGER: This did lot not comply with the U. S. P. requirements and was of very undesirable quality as it had a decided yellowish color, contained mucoid growths, and yielded about 63 times more residue after the evaporation of 100 mils than is permitted by the U. S. P. It apparently was obtained by maceration instead of distillation.

Reported by J. G. ROBERTS.

WATER, ORANGE FLOWER, STRONGER: This lot also, did not comply with the U. S. P. requirements and was of undesirable quality. It yielded about 70 times more residue after the evaporation of 100 mils than is permitted by the U. S. P., had a decided yellowish color and contained mucoid growths. It also appeared to have been obtained by maceration instead of by distillation. Reported by J. G. ROBERTS.

WILD CHERRY BARK: Has been very scarce the past year owing to the dearth of labor. Much which has been offered has been very thick and weak in flavoring power.

One lot consisted of 65% of official *Prunus serotina* and 35% of another Prunus bark, probably *Prunus demissa*, which was blackish externally, light brown on its inner surface, very thick and practically devoid of hydrocyanic acid. Reported by G. E'WE.

YERBA SANTA: Two lots contained 11% and 15%, respectively, of stems whereas the U. S. P. permits olny 5%. Reported by G. E'WE.

ZINC BORATE: One lot contained sulphates equivalent to 18% of zinc sulphate and was rejected. Reported by G. E'WE.

ZINC OXIDE: Only two of the fourteen lots examined contained lead in excess of the U. S. P. limit.

The lead in one of the two samples was only slightly in excess, whereas the other contained a tremendous excess. Reported by G. E'WE.

The following table shows the results of 206 crude drug assays made in the Analytical Laboratory of the H. K. Mulford Company during the year June 1, 1918–June 1, 1919.

Drug.	No. of samples.	Lowest assay.	Highest assay.	Average.	Standard.	No. standard. Above.	Below.
Aconite Leaves	2	0.350%	0.660%	0.505%	0.2% alkaloids	2	0
Aconite Root	5	0.371%	0.693%	0.549%	0.5% alkaloids	4	1
Belladonna Leaves	14	0.272%	0.686%	0.469%	0.3% alkaloids	13	1
Belladonna Root	7	0.450%	0.672%	0.701%	0.45% alkaloids	7	0
Cantharides, Chinese	3	0.667%	1.290%	0.933%	0.6% cantharidin	3	0
Capsicum	4	14.44%	15.08%	14.80%	15% non-volatile ether-sol. matter	2	2
Cinchona, Red	2	4.90%	9.40%	7.15%	5% alkaloids	1	1
Cinchona, Yellow	12	3.90%	8.86%	6.46%	5% alkaloids	9	3
Colchicum Seed	4	0.555%	0.650%	0.621%	0.45% colchicine	4	0
Conium Seed	5	0.739%	1.003%	0.875%	0.5% coniine	5	0
Cubeb Berries	3	23.6%	25.4%	24.8%	15% oleoresin	3	0
Gelsemium	1	0.930%	0.930%	0.930%	0.4% alkaloids	1	0
Ginger, Jamaica	18	3.11%	7.45%	4.69%	4% oleoresin	13	5
Guarana	6	4.18%	4.70%	4.25%	4% caffeine	6	0
Hydrastis	10	2.97%	4.06%	3.64%	2.5% alkaloids	10	0
Hyoscyamus	2	0.0843%	0.0975%	0.0909%	0.065% alkaloids	2	0
Ignatia	4	2.62%	3.28%	3.03%	2% alkaloids	4	0
Ipecac	18	1.63%	2.54%	2.25%	1.75% alkaloids	17	1
Jalap	2	7.50%	15.10%	11.30%	7% total resins	2	0
Kola Nuts, Dried	16	1.40%	2.73%	1.88%	1.5% caffeine	13	3
Lobelia	10	0.460%	1.066%	0.857%	0.5% alkaloids	10	0
Nux Vomica	12	2.15%	2.80%	2.49%	2.5% alkaloids	5	7
Physostigma	8	0.120%	0.373%	0.190%	0.15% alkaloids	4	4
Pilocarpus	4	0.570%	0.930%	0.762%	0.6% alkaloids	3	1
Podophyllum	18	2.49%	6.50%	3.99%	3% resin	14	4
Sanguinaria	7	2.50%	6.65%	5.03%	2.5% alkaloids	7	0
Stramonium Leaves	1	0.544%	0.544%	0.544%	0.25% alkaloids	1	0
Veratrum	8	1.22%	2.70%	1.57%	1% alkaloids	8	0
Totals	206					173	33

COMPARISON WITH REPORTS PREVIOUSLY SUBMITTED.

Year.	Total.	Above.	Below.	Percent. above.
1909 Report	395	313	82	79.3
1910 Report	340	291	49	85.6
1911 Report	263	224	39	85.1
1912 Report	298	235	63	78.8
1913 Report	382	264	118	69.1
1914 Report	286	221	65	77.2
1915 Report	133	98	35	73.6
1916 Report	215	156	58	72.9
1917 Report	172	147	25	85.3
1918 Report	131	113	18	86.8
1919 Report	206	173	33	83.9

Last year one-half of the Aconite Root, Hyoscyamus, Jalap and Stramonium Seed samples ran below standard. This year Capsicum, Red Cinchona, Nux Vomica and Physostigma are the drugs, one-half or more of which ran below standard. The general yearly average of 83.9% is very satisfactory in view of the dearth and inexperience of the available labor during the past year.

Reported by G. E'WE.

Committee
G. E'WE,
CHARLES H. LAWALL,
G. W. OSTERLUND,
J. G. ROBERTS, *Chairman.*

COMPOUND SOLUTION OF CRESOL.*

BY S. L. HILTON.

The official formula for this preparation is accompanied by some difficulties; on account of these it is not usually compounded in a retail pharmacy. The cost of linseed oil and potassium hydroxide unnecessarily increases that of the finished product. The liberation of glycerin in making the product is also a disturbing element, and the product made with linseed oil has not been a popular one, owing to its dark color.

The above facts led to a series of experiments, wherefrom some suggestions are submitted for the next revision of the U. S. Pharmacopoeia, also a sample of the product, prepared according to the devised formula. The finished, modified preparation is of the same cresol strength as the official, contains no glycerin, has approximately the same amount of soap, mixes clear with water and is much lighter in color. It has been pronounced superior to the official preparation by several physicians who had formerly used the official preparation.

Formula.

Cresol	500 Gm.
Oleic Acid	226 Gm.
Sodium Hydroxide	35 Gm.
Water	
	1000 Gm.

Dissolve the sodium hydroxide in 100 mils of water and filter through cotton. Weigh the oleic acid in a tared container (bottle or flask), add the cresol, shake well. Add the solution of sodium hydroxide, shake thoroughly until saponified and add sufficient water to bring the weight of the product to 1000 grammes.

The preparation can be made in less than 15 minutes and has all of the properties of the official preparation, without the disadvantages pointed out above.

It cost about 60 cents per liter as compared to about 98 cents per liter for the official, at the present market price of materials.

*Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., New York City Meeting, 1919.

COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 25.

PHILADELPHIA, PA., August 4, 1919.

TO THE MEMBERS OF THE COUNCIL:

Motions No. 30 (*Temporary Membership of Soldier and Sailor Pharmacists*) and *No. 31* (*Approval of Proposal to Organize Section of World War Veterans at Next Annual Meeting*), have each received a majority of affirmative votes.

Motion No. 33 (*Election of Members; applications Nos. 271 to 299 inclusive*) has received a majority of affirmative votes.

Motion No. 34 (*Election of Members*). You are requested to vote on the following applications for membership:

No. 300. Domingo Poli, Luis Venegas St. No. 51, Guayama, Porto Rico. rec. by Wm. B. Day and E. N. Gathercoal.

No. 301. Samuel Lourie, 397 Cross St., Malden, Mass., rec. by Theo. J. Bradley and Howard H. Smith.

No. 302. Chas. Aubrey Spence, Jr., 1001 W. Franklin St., Richmond, Va., rec. by W. F. Rudd and C. F Walker.

No. 303. Harry T. Haley, Tazewell, Va., rec. by W. F. Rudd and C. J. Walker.

No. 304. Mrs. Charles Saint, Kaplan, La., rec. by R. F. Grace and Adam Wirth.

No. 305. Walter G. Williams, Charlotte C. H., Va., rec. by W. F. Rudd and C. F. Walker.

No. 306. Robert Lee Walker, 501 Clay Ave., Norfolk, Va., rec. by W. F. Rudd and C. F. Walker.

No. 307. W. D. Clark, Cook & A Streets, Portsmouth, Va., rec. by W. F. Rudd and C. F. Walker.

No. 308. Arthur L. I. Winne, 601 W. 24th St., Richmond, Va., rec. by W. F. Rudd and C. F. Walker.

No. 309. Robert Leroy Miller, Christiansburg, Va., rec. by W. F. Rudd and Wm. B. Day.

No. 310. G. L. Anderson, 4164 Drexel Bldg., Chicago, Ill., rec. by Wm. Gray and Wm. B. Day.

No. 311. John Weireter, 3401 Southport Ave., Chicago, Ill., rec. by Wm. Gray and Samuel C. Henry.

No. 312. Thelma Webber, 2450 Wylie Ave., Pittsburgh, Pa., rec. by Albert F. Judd and J. A. Koch. Materia Medica Prize, Pittsburgh College of Pharmacy.

No. 313. Clarence Greenwood Earlin, 1817 Brighton Rd., Pittsburgh, Pa., rec. by Louis A. Saalbach and J. A. Koch. Theoretical Pharmacy Prize, Pittsburgh College of Pharmacy.

No. 314. Alexander Meyers, 3900 Penn. Ave., Pittsburgh, Pa., rec. by Louis A. Saalbach and J. A. Koch. Chemistry Prize, Pittsburgh College of Pharmacy.

No. 315. Garett Edward Wagner, 4th & Water St., Belle Vernon, Pa., rec. by Louis A. Saalbach and J. A. Koch. Pharmaceutical Products Prize, Pittsburgh College of Pharmacy.

No. 316. Donald Martin Mitchell, 120 Laurel Ave., New Castle, Pa., rec. by J. A. Koch and L. K. Darbaker. Pharmacognosy Prize, Pittsburgh College of Pharmacy.

No. 317. David Busis, 2254 Centre Ave., Pittsburgh, Pa., rec. by J. A. Koch and F. J. Blumenschein.

No. 318. Jesse Turner Clanton, 636 N. Main St., Danville, Va., rec. by W. F. Rudd and C. F. Walker.

No. 319. Herman G. Weicker, 136 Liberty St., New York, N. Y., rec. by T. R. L. Loud and Hugo H. Schaefer.

No. 320. Morris S. Fine, Doremus Ave., Newark, N. J., rec. by T. R. L. Loud and Hugo H. Schaefer.

No. 321. William Lee Crosby Nichols, 111 N. Market St., Chicago, Ill., rec. by Wm. Gray and Wm. B. Day.

No. 322. Chas. F. Port, 150 Chambers St., New York, N. Y., rec. by Chas. F. Fischer and Hugo Schaefer.

No. 323. Fred. J. Budelman, 348 E. 78th St., New York, N. Y., rec. by Chas. F. Fischer and Hugo Schaefer.

No. 324. Horacio G. Arrieta, 14 San Julio, Marianao, Havana, Cuba, rec. by J. G. Diaz and José Alacan.

No. 325. Sergio Herrera, 85 Cuba St., Havana, Cuba, rec. by J. G. Diaz and José Alacan.

No. 326. Dr. A. Mesa, 57 Independencia, Agramonte, Matanzas, Cuba, rec. by J. G. Diaz and José Alacan.

No. 327. Dr. Manuel J. Diaz, Campanario 66, Havana, Cuba, rec. by A. D. Guerra and Frank C. Starr.

No. 328. William Polk Teel, Hardin Co., Batson, Texas, rec. by R. H. Walker and J. M. Duggan.

No. 329. Rose Fried, 1761 Madison Ave., New York City, rec. by H. V. Arny and Hugo H. Schaefer.

No. 330. Charles E. Gilland, 31 Brattle St., Cambridge, Mass., rec. by John G. Godding and Theo. J. Bradley.

No. 331. Fred W. Fuhrmeister, Farmington, Missouri, rec. by Francis Hemm and Frantz F. Berg.

No. 332. Katherine E. O'Hearn, 11 Copley St., Roxbury, Mass., rec. by John G. Godding and Theo. J. Bradley.

No. 333. Robert Maxwell Duckett, Whitmire, S. C., rec. by D. T. Riley and E. G. Eberle.

No. 334. Samuel Connor Hodges, 401 E. Main St., Greenwood, S. C., rec. by D. T. Riley and E. G. Eberle.

No. 335. Odell Atwood Matthews, 104 E. Main St., Bennettsville, S. C., rec. by D. T. Riley and E. G. Eberle.

No. 336. Marion S. Dantzler, Elloree, S. C., rec. by D. T. Riley and E. G. Eberle.

No. 337. Lester E. Bishop, Laurens, S. C., rec. by D. T. Riley and E. G. Eberle.

No. 338. Geo. W. Evans, Anderson, S. C., rec. by D. T. Riley and E. G. Eberle.

No. 339. S. F. Donnald, Honea Path, S. C., rec. by D. T. Riley and E. G. Eberle.

No. 340. John Bates, 1320 Woodside Ave., Greenville, S. C., rec. by D. T. Riley and E. G. Eberle.

No. 341. Carroll M. Miller, 103 W. Main St., Laurens, S. C., rec. by D. T. Riley and E. G. Eberle.

No. 342. Arthur P. Aimar, 409 King St., Charleston, S. C., rec. by D. T. Riley and E. G. Eberle.

No. 343. Donald J. Brown, 4 West Broad St., West Hazleton, Pa., rec. by E. G. Eberle and J. W. England.

No. 344. Frank M. Smith, 117 Ashley Ave., Charleston, S. C., rec. by E. G. Eberle and J. W. England.

No. 345. M. Gusman, 322 Champlain Ave., Cleveland, Ohio, rec. by W. F. Hagemeister and A. L. Flandermeyer.

No. 346. A. C. Serra, 2723 Woodland Ave., Cleveland, Ohio, rec. by W. F. Hagemeister and A. L. Flandermeyer.

No. 347. Herbert M. Highfield, 153 Woodlawn Ave., Janesville, Ohio, rec. by Geo. B. Kauffman and Frank H. Freericks.

No. 348. Charles Otto Moosbrugger, 650 N. Main St., Dayton, Ohio, rec. by E. H. Thiering and Frank H. Freericks.

No. 349. Alton F. Conrad, 9300 Kinsman Rd., Cleveland, Ohio, rec. by A. L. Flandermeyer and M. N. Ford.

No. 350. Zygmunt W. Kobylanski, 2652 Superior Ave., Cleveland, Ohio, rec. by W. F. Hagemeister and A. L. Flandermeyer.

No. 351. Anthony Bert Ejbl, 7008 Broadway, Cleveland, Ohio, rec. by W. F. Hagemeister and A. L. Flandermeyer.

No. 352. Albert J. Maurer, 10514 St. Clair Ave., Cleveland, Ohio, rec. by W. F. Hagemeister and A. L. Flandermeyer.

No. 353. Ellsworth Loesch, 2843 W. 25th St., Cleveland, Ohio, rec. by W. F. Hagemeister and A. L. Flandermeyer.

No. 354. Herbert E. Benfield, 12520 Detroit Ave., Cleveland, Ohio, rec. by W. F. Hagemeister and A. L. Flandermeyer.

No. 355. Harold Fildew Millman, 134 Hamilton St., Rahway, N. J., rec. by E. G. Eberle and J. W. England.

No. 356. Isaac Alonzo Rigby, 156 E. Main St., Spartansburg, S. C., rec. by D. T. Riley and E. G. Eberle.

415 N. 33RD STREET.

J. W. ENGLAND, *Secretary.*

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.
Committee on Publication: J. W. ENGLAND, *Chairman;* G. M. BERINGER, CASWELL A. MAYO, H. B. MASON, E. L. NEWCOMB, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio.*

CORRECTIONS TO BE MADE IN REPORT OF A. PH. A. COMMITTEE ON U. S. PHARMACOPOEIA.

In the December, 1918, issue of the Journal A. Ph. A., Volume VII, Number 12, on page 1106 and page 1107, under article "Impurities in Potassium Carbonate and Bicarbonate" there were the following typographical errors:

On page 1106, 6th paragraph, 4th line, should read: *"Page 885"* instead of "page 883."

On page 1107, 3rd paragraph, 3rd line, should read: *"2 grammes of $KHCO_3$"* instead of "2.8 grammes of $KHCO_3$."

On page 1107, 5th paragraph, 1st line, should read: "To the dry sample" instead of "or the dry sample."

THE NATIONAL PHARMACEUTICAL MEETINGS IN NEW YORK CITY.

Extended reports of the New York meeting of the American Pharmaceutical Association and related organizations during the last week of August must be deferred to succeeding issues of the JOURNAL.

The nominees for president of the American Pharmaceutical Association, the ballots to be mailed are: C. H. Packard, of Boston, F. W. Nitardy, of Brooklyn, and Leonard A. Seltzer, of Detroit.

Officers elected by the American Conference of Pharmaceutical Faculties are: *President,* W. F. Rudd, of Richmond, Va.; *Vice-President,* J. A. Koch, of Pittsburgh; *Secretary-Treasurer,* T. J. Bradley, of Boston; *Chairman of the Executive Committee,* Henry Kraemer, of Ann Arbor, Mich.; and *Chairman of the Syllabus Committee,* E. F. Cook, of Philadelphia.

The National Association of Boards of Pharmacy elected these officers: *President,* W. R. Jarrett, of Oklahoma City, Okla.; *Vice-Presidents,* Lucius L. Walton, of Williamsport, Pa.; J. C. Piercy, of Tonopah, Nev., and J. L. Dow, of Lancaster, N. H.; *Executive Committee,* Chas. Gietner, Chairman, Missouri; Members: John Culley, Utah; Lawrence C. Lewis, Alabama; *Treasurer,* Chas. H. Skinner, Vermont (re-elected); *Secretary,* H. C. Christensen, Illinois (re-elected).

A War Veterans' Section of the A. Ph. A. was organized with the following officers: *Chairman,* Robert P. Fischelis; *Vice-Chairmen,* W. M. Chase and T. Fairchild; *Secretary,* W. D. Walters. Clyde L. Eddy was made chairman of the committee on publicity.

FACTORS IN ASSOCIATION WORK.

In his address to Congress, President Wilson said, "There can be no energy in endeavor where there is no peace of mind." This is true relative to those who are assigned duties; they should be in position to work unhampered by uncertainties and be given wholehearted encouragement.

In all associations there are microscopic minds; these see faults that would be invisible if focused in a way which presented them in due proportion; they also recognize actual deficiencies that exist and are obscure to others. Thus while, at times, there may be unwarranted criticism, the possibilities of improvement are not infrequently developed by criticism. Differences in opinion, contrasts in poin s of view, debate, amendment and reservations seem to be necessary conditions to progress.

Just as unjust criticism discourages and destroys, so also the development of an association is retarded by too much conformity and uniformity. We need dissent to spur us on to our best endeavors; disagreement is often as helpful as agreement. An association that is content with its accomplishments is as near standstill as the individual who is perfectly content with the output of his work, day by day.

Coming back to the first thought, in an association we have the right to congenial comradeship, and we shall labor most effectually when in our dispositions we are happy, possessed of a morale that implies "belief in one another," that we can coöperatively do the best work.

THE ADVERTISING VALUE OF THE JOURNAL SHOULD BE DEMONSTRATED AND ITS CLIENTELE INCREASED.

The members of the American Pharmaceutical Association should realize that the money received from advertisements in the JOURNAL constitutes a dividend for them from their investment in the annual dues. These dividends will increase with additional income from advertising, in other service features. Non-members pay $4.00 for the Year Book and $4.00 for subscription to the JOURNAL.

It is important that the advertisng value of the JOURNAL be evident and recognized. The publication reaches patrons of manufacturers of and dealers in pharmaceutical products and other lines; the members themselves are in the best position to place an estimat on the valuation of this patronage. What is yours worth?

The income from advertising during these times of high paper and increased labor costs has contributed to the ability of our Association to furnish its publications without increasing the dues. Practically all members can assist in this promotion and your coöperation is solicited in your and the Association's interest. The advertising pages, no less than the reading pages, mark the membership.

THE HIGH COST OF LIVING AND THE PROFESSOR'S SALARY.

The high cost of living is the result of the advanced cost of commodities and higher scale of wages in some activities without corresponding increase in the income or salaries of others. If it were possible to adjust the advances in accordance with demands and requirements higher costs would not be complained of.

It is surprising that under existing salary limitations such a large proportion of teachers have willingly and devotedly continued in their service. There is evident a spirit of altruism that should be recognized by an interest of the alumni to better the conditions referred to. The subject was a topic of the American Conference of Pharmaceutical Faculties, and a very timely one. The undergraduate does not understand the sacrifice made for him by the teacher. The need of endowments for colleges of pharmacy is admitted and adequate provision should be made for paying their professors salaries commensurate with the importance of their positions and duties.

PHARMACEUTICAL RESEARCH.

The address of President Kirkby, of the British Pharmaceutical Conference, was intensely practical and research was an important theme. The necessity of pharmaceutical research by pharmacists was emphasized.

The present situation of pharmacy should cause us to give most careful heed, and this thought was evident in the address of President LaWall and in the programs of the various sections of the American Pharmaceutical Association. Lack of coöperation in research means not only needless duplication of effort, but loss through arrested development.

INCOMPATIBILITY OF MERCURIC BENZOATE AND SODIUM CHLORIDE.

Gaucher and other Continental physicians have prescribed mercuric benzoate dissolved in dilute sodium chloride solution for administration by hypodermic injection for the treatment of syphilis. At a recent meeting of the Academie de Médicine, E. Seger pointed out that such a combination was incompatible, and that mercuric chloride and sodium benzoate resulted from the double decomposition of these salts. M. Delépine fully confirms this. He prepared two solutions, one with mercuric benzoate and sodium chloride, according to Gaucher's formula; the other with equivalent quantities of mercuric chloride, sodium benzoate, and sodium chloride. The ultimate composition of the two products was identical. On shaking out with ether, that solvent contained the same amount of mercuric chloride in each case. This proves that the original formula of Gaucher is defective and that nothing is gained by the use of mercuric benzoate, to immediately decompose it into mercuric chloride. If ammonium benzoate is used instead of sodium chloride in the solution with mercuric benzoate and some ammonia, the result is different. A crystalline double salt is formed, which might possibly be of service therapeutically. Ultimately, however, even this compound is likely to be decomposed into mercuric chloride when it comes into contact with the sodium chloride present in the body.—M. Delépine (*Répertoire Pharm.*, 30, 184, 1919; through *Pharmaceutical Journal and Pharmacist*, July 5, 1919).

NEW TEST FOR ACONITINE.

While working at the Chemical Laboratory of the National Hygiene Bureau of Buenos Aires, L. P. J. Palet (*Journ. Pharm. Chem.*, No. 9, 1919; *Chem. & Drug.*, July 5, 1919) discovered a new test for aconitine. He found that on heating samples of amorphous aconitine with phosphoric acid (sp. gr. 1.7) over a small flame until vapors were evolved, a violet color was produced. Only a grey coloration was obtained with the crystalline varieties of aconitine. He prepared a reagent, consisting of 25 grammes of phosphoric acid and 1 gramme of sodium molybdate, with which crystalline aconitines yielded a very bright violet coloration, whereas these alkaloids had failed to react to phosphoric acid alone. He tested the prepared reagent's value as a means of recognizing aconitine, and found that only aspidospermine (violet) and veratrine (violet-red) yield colorations which could be mistaken for the violet reaction of aconitine. The effects of oxidizing agents on the first, and of mineral acids on the second, however, enable both easily to be distinguished from aconitine.

THE HARRISON MEMORIAL LECTURE.

The following paragraph appeared under "Notes" in *Nature* for July 31: "On Wednesday, July 23, Mr. F. H. Carr, at a meeting of the British Pharmaceutical Conference, delivered a memorial lecture on the late Lieut.-Colonel E. F. Harrison, whose invaluable work on the development of the anti-gas respirator has lately been the subject of so much eulogy. No more fitting place could have been chosen for the lecture than the buildings of the Pharmaceutical Society, in which Harrison received his training in the profession he had selected, and with which he was afterwards so intimately associated, nor could the delivery of a lecture in his memory have been entrusted to a better or more capable man than Mr. Carr. Most of the audience had been personal friends of Harrison's, some of them for upwards of twenty years, and they knew that the testimony that Mr. Carr bore to his sterling qualities, his upright nature, his sincerity, and the fearless manner in which he grappled with difficult problems was only too well deserved. The details which Mr. Carr gave of Harrison's early life, his tenacity of purpose and remarkable self-denial, were interesting in the extreme, and went far to explain a certain austerity in his nature. The part which Harrison played in the final phase of his life, the development of the box-respirator, by which so many lives were saved and which contributed so largely to the victorious issue of the war, occupied the latter part of the lecture, which will long remain in the memory of those who were fortunate enough to hear it."

PERMANENT PHARMACEUTICAL EXHIBITION IN PARAGUAY.

The National Pharmaceutical Society of Paraguay has decided to establish in Asuncion a permanent exhibition of pharmaceutical products, chemicals, biological preparations, etc., which will be opened on October 12.

DEATHS.

We have been advised of the decease, on August 23d, of Theodore Henry Patterson. A sketch of the deceased is printed in the February, 1919, issue of the Journal A. Ph. A., page 87. Dr. Patterson was a life member of the American Pharmaceutical Association, a Charter member of the Chicago Veteran Druggists' Association, an ex-president and the first secretary of the latter organization.

News has also reached the office of the death of Charles Harrison Bassett, of Boston, a life member of the Association. A picture appears in the June issue Journal A. Ph. A., page 450.

ALBERT FREDERICK SEEKER.

Albert Frederick Seeker died August 19th, following an operation for appendicitis.

For fourteen years Mr. Seeker had been in the employ of the Bureau of Chemistry, United States Department of Agriculture, and for the last three years was chief of the New York Station. He was considered by all who knew him, or his work, as the ablest chemist in the Service. Every one in the Bureau and those having dealings with Mr. Seeker, as the Bureau's representative, had a profound respect for his knowledge, ability and judgment. He was admired by his friends and associates.

By his death the Bureau has lost one of its ablest officers and the pharmaceutical profession a silent but very active ally.

It was Mr. Seeker's duty to see that the Food and Drugs Act was enforced in the New York district and he put his life and soul into the work. In making decisions he combined his broad knowledge of chemistry, and its allied subjects, with judgment that is the gift of only a few. As a result of his work the people were protected and the pharmaceutical

profession received much needed assistance in maintaining its high standards. Controlling the quality of foods and drugs entering the great port of New York is a large problem, but we may say that Mr. Seeker did his duty well.

C. J. Z.

A DRUGGIST BACHELORS' CLUB.

Several months ago some sixty New Orleans pharmacists banded themselves into an organization. The only requirements for membership were a liking for a good time and an unmarried status. They called the organization the Druggist Bachelors' Club.

The officers must pledge their troth and when successful in matrimonial contract yield their office and membership. Chairman R. F. Grace, of the Louisiana Committee on Membership, A. Ph. A., is largely responsible for the organization of which he is an officer.

SOCIETIES AND COLLEGES

MEMBERSHIPS IN THE AMERICAN PHARMACEUTICAL ASSOCIATION AS COLLEGE PRIZES.

In addition to the prize memberships given by Schools of Pharmacy in the American Pharmaceutical Association, mention of which was made in the July issue of the JOURNAL page 589, the Highland Park College of Pharmacy awarded a membership to Clifford A. Neville for best work in Organic Chemistry, and the University of Montana two memberships, being the Alex. F. Peterson Prize in Manufacturing Pharmacy to Olive C. Gnose, of Anaconda, and the Charles E. Mollett Prize in Pharmacognosy to Ida M. Sylvester, also of Anaconda.

NATIONAL COMMITTEE ON THE PHARMACEUTICAL SYLLABUS.*

BULLETIN XXIII.

The Committee will meet at the headquarters hotel during the week of the 1919 Convention of the American Pharmaceutical Association, August 25–30. The exact time and place will be announced at the Convention by the Chairman and the Secretary.

As the third edition of the *Syllabus* should go into effect during 1920, this meeting will be of great importance, as it will probably be the last opportunity we shall have to meet before the book appears, and all other business will have to be done by correspondence. For this reason, members are urged to make a special effort to be present. A great deal was accomplished at the meeting last year in Chicago, and much work has been done by the sub-committees and the officers, so that the body of the revised book is nearly ready for the printer. If we can accomplish as much at the coming meeting as at the last one, the book should appear on time, in spite of the difficulty of accomplishing a special piece of work like this during the disturbed conditions due to the great war.

Motion No. 23, by C. M. Snow, that the subject of Commercial Pharmacy be omitted from the next edition of the Syllabus, *is lost*, the vote being: Yes, 4; No, 14; not voting, 3.

Motion 24, by C. M. Snow, that if the subject of Commercial Pharmacy be included in the next edition of the *Syllabus*, it shall be printed in small type, to indicate that it is not compulsory that it be taught in the schools or examined on by the Boards of Pharmacy, *is carried*, the vote standing: Yes, 10; No, 8; not voting, 3.

Signed,

THEODORE J. BRADLEY,
Chairman.

BOSTON, MASS., Aug. 15, 1919.

FIFTH NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES.

From data and information on hand the forthcoming Fifth National Exposition of Chemical Industries at the Coliseum and First Regiment Armory, Chicago, during the week of September 22nd, promises with its attendant society meetings to be an assemblage worthy of the past accomplishments of this great Exposition. The managers of the Exposition report that there are as many exhibitors as at the last very complete Exposition, that there are a great many who have never before been exhibitors and for which exhibits visitors may look forward with interest. The old established exhibitors have nearly all something new in the way of developed products since the entry of our country into the war for which the chemical profession and industries may look with renewed interest.

* This Bulletin is published for record, after the convention has been held.

NATIONAL ASSOCIATION OF RETAIL DRUGGISTS.

At this writing the prospects are that the Rochester convention of the National Association will be largely attended. An interesting program has been prepared which includes addresses by Commissioner of Internal Revenue, Daniel C. Roper, and Wayne B. Wheeler, general counsel of the Anti-Saloon League. The latter also spoke before the American Pharmaceutical Association in New York City and his remarks indicated a reasonable, rational attitude.

The National Association of Retail Druggists is rendering valuable service to druggists particularly pronounced in its legislative work. The hope is expressed that the meeting will be successful in every respect.

AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS.

Prominent educators and chemists of the United States and Canada have organized the American Society of Biological Chemists.

The petitioners for incorporation and temporary directors are: Andrew Hunter, of the University of Toronto; Lafayette B. Mendel, of Yale University; E. V. McCollum, of Johns Hopkins University; Harold C. Bradley, of the University of Wisconsin; Victor C. Myers, of No. 303 East Twentieth Street, New York City; Donald D. Van Slyke, of Avenue A and Sixty-sixth Street, New York City; and Stanley R. Benedict, of 477 First Avenue, New York City.

STATE PHARMACEUTICAL ASSOCIATION OFFICERS FOR 1919–1920.

IDAHO.

President, Allen Fisher, Twin Falls.
Vice-President, Frank Murray, Twin Falls.
Secretary, Thomas Starr, Boise.
Treasurer, C. M. Isenburg, Ashton.

The Drug and Chemical Alliance was endorsed. Legislative matters were discussed. Affiliation with the American Pharmaceutical Association was favored. Guyer Hot Springs was selected for the 1920 meeting.

MAINE.

President, Edgar F. Carswell, Gorham.
First Vice-President, S. L. White, Houlton.
Second Vice-President, Harry C. Riddle, Rangeley.
Third Vice-President, George W. Rankin, Portland.
Treasurer, Albert W. Meserve, Kennebunk.
Secretary, Dr. M. L. Porter, Danforth.

The Maine Convention was held at the Mount Kineo House. An address on biological products was delivered by Dr. George C. Diekman, of New York. Legislative matters were discussed.

MONTANA.

President, J. W. Seiden, Lewistown.
First Vice-President, C. R. Fuller, Anaconda.
Second Vice-President, Henry Hubert, Jr., Butte.
Third Vice-President, Charles J. Chapple, Billings.
Treasurer, J. N. Talbot, Manhattan.
Secretary, J. A. Riedel, Boulder.

The outstanding feature of the Montana Association was its aspect as an informal economic conference. Affiliation with the American Pharmaceutical Association was favored. Helena was chosen for the 1920 convention.

OHIO.

President, Chas. E. Roseman, Cleveland.
First Vice-President, Frank Schwilk, Dayton.
Second Vice-President, H. Dale Kuhn, Shelby.
Treasurer, L. W. Funk, Columbus.
Secretary, Theo. D. Wetterstroem, Cincinnati.
Member of the Council, J. W. Dysle, Marietta.

The Legislative Committee presented a very comprehensive report. Plans were made for the employment of a legislative agent. A number of interesting addresses were made, among the speakers being F. H. Freericks, E. C. Brokmyer, Dr. Frank Cain and Charles T. Souther. President J. W. Dysle reviewed the important legislative measures and the effect on the drug trade.

RHODE ISLAND.

President, M. H. Corrigan.
Vice-President, E. H. Mason.
Treasurer, F. R. Keighley.
Secretary, O. H. Barrett.
Executive Committee, J. P. McDonald, W. J. Batchelder and B. A. Smith, Jr.

The meeting was held at The Hummocks, Hamilton, and was attended by about 150 members.

SOUTH CAROLINA.

President, D. Tilden Riley, Florence.
First Vice-President, S. C. Hodges, Greenwood.
Second Vice-President, T. P. Young, Greenwood.
Secretary and Treasurer, Frank M. Smith, Charleston.

Ninety percent. of the members of the South Carolina Pharmaceutical Association answered

to roll call. As a result of the suggestions by President D. T. Riley the State is to be organized into districts and these will send delegates to the State Convention. Affiliation with the American Pharmaceutical Association was favored; about twenty members were added from South Carolina to the membership of the A. Ph. A. The annual dues were increased to three dollars.

Charleston was selected for the next place of meeting.

TENNESSEE.

President, H. M. Oliver, Union City.

First Vice-President, R. L. Thompson, Nashville.

Second Vice-President, John Sonner, Knoxville.

Third Vice-President, W. J. Cox, Memphis.

Treasurer, T. S. Scruggs, Jackson.

Secretary, D. J. Kuhn, Nashville.

A resolution was passed advocating the repeal of the section of the new pharmacy law whereby under certain conditions registrations are permitted without examination. Many interesting papers were read.

Knoxville was chosen as the next place of meeting.

UTAH.

President, F. J. Holland, Salt Lake.

First Vice-President, C. E. Driver, Ogden.

Second Vice-President, D. C. Watson, St. George.

Secretary, Eugene L. Wade, Salt Lake.

Treasurer, George Huscher, Murray.

Members of the Executive Committee, F. J. Folland, Hugo Druehl, Salt Lake; George Huscher, Murray.

Legislative matters were given much consideration, and also business management. Endorsement was given to the National Drug and Chemical Alliance. United effort of the drug trade is proposed by this organization against fanatical attacks and adverse legislation.

Salt Lake was selected for the 1920 convention.

VIRGINIA.

President D. E. Seagle, Pulaski.

First Vice-President, J. B. Clower, Woodstock.

Second Vice-President, W. T. Reeves, South Boston.

Secretary, E. L. Brandis, Richmond.

Treasurer, Miss Maud Lambert, Roanoke.

Entertainment, Chas. M. Gray, Norfolk.

Local Secretary, R. N. Moir, Roanoke.

Executive Committee, Harry Orchard, Lynchburg.

Legislative Committee, J. E. Jackson, Tazewell.

President Charles H. LaWall, of the American Pharmaceutical Association, spoke on the need of higher education, and urged affiliation of the state associations with the A. Ph. A. Eugene Brokmyer analyzed Congressional legislation. President Girard Thompson stressed the importance of higher pharmaceutical education and favored the federation of drug interests.

The Association will again meet next year at National Bridge.

THE COMMENCEMENT OF ANOTHER YEAR FOR COLLEGES AND SCHOOLS OF PHARMACY.

Catalogues from many Schools and Colleges of Pharmacy have been received. These show progress in pharmacy; higher entrance requirements are demanded and the courses have been extended. It is noticeable that more hours are given to laboratory training and a number of institutions have added commercial courses, while others have prepared for a more thorough training in the business management of drug stores.

From information, the classes in most schools promise to be much larger than during the year preceding the war, and all of them expect to have more students than last year.

Some of the schools have advanced their tuition fees, responsive to higher costs in all lines, but in no instance have the fees been increased sufficiently, if the lower purchasing value of the dollar is considered.

The Alumni of schools should see that their Alma Maters have endowments which will provide an income that will make them less dependent on tuition fees. Endowments should also be provided for the teaching staffs; even the clergymen, who are deemed as deficient in business qualifications as professors, have displayed a degree of energy that has resulted in the establishment of very large endowments.

The latter reference calls to mind an advertisement in a daily paper for window cleaners, wages $7.50 per day, the equal of $2300 per year. While professors receive more than that, perhaps, some associate professors and assistant professors would regard $2300 a year affluence. The question of professors' salaries was a timely topic before the American Conference of Pharmaceutical Faculties.

THE PHARMACIST AND THE LAW.

LEGAL ADVICE WITH A GUARANTEE.

In the following, an editorial of the *Scientific American*, August 16, 1919, is drawn on for information and comment. Almost everything one does to-day may appropriately be examined in the light of its possible consequence to others; and surprising it is how often agreement as to the extent of these is difficult to reach. The number of decisions which our courts reach by a divided vote is earnest of this; unanimity is the exception among professional judges. A tale is accredited to Mark Twain relating to a business man who conceived a plan for making a fortune but was in doubt as to how the courts would regard the scheme. The question was laid before a District Attorney in every detail and asked whether the plan would stand legal attack. The proponent was advised to put the plan into effect and then he (the District Attorney) would prosecute him under the assumption that the plan was illegal; the result of the trial would decide. Even such decision, as has been proven, will not always determine legality, for judges differ. The thing is reduced to a guessing contest, with penalties for a bad guess.

The American Bar Association has a suggestion which would correct this. They would have Congress empower some administrative body to determine in advance, on proper application, whether a business agreement or arrangement is due and reasonable, and therefore lawful. The decision thus reached in advance might be permanent and binding; or at least, if it were subject to review and reversal, there would be no penalty attached to having acted under it in the meantime.

Aside from the relief which this would extend to business men in enabling them to initiate large undertakings with greater security against legal inpasssé, it would in all certainty relieve the cluttered courts of a goodly portion of their calendar arrears. There would of course be suits brought to reverse the commission's findings; but they would be small in numbers in comparison with present Sherman Law prosecutions, injunction proceedings and damage claims.

VENEREAL DISEASE REMEDIES SEIZED BY FEDERAL OFFICERS AS MISBRANDED.

By order of the Federal courses more than 450 seizures have been made recently in different parts of the United States of so-called cures for venereal diseases. A campaign to end the false labeling of such preparations is being conducted by the officials charged with enforcing the Federal food and drugs act. In all the seizure actions the Government alleged the preparations to be falsely and fraudulently labeled, because the ingredients could not produce the results claimed on the labels.

Action under the Federal food and drugs act in reference to venereal disease preparations coming under its jurisdiction and sold under proprietary names is limited by the terms of the act largely to the prevention of false or fraudulent labeling. The act does not prevent the sale of any mixture as medicine, however worthless it may be, if there is directly or indirectly no false or fraudulent labeling. The officials in charge of the enforcement of the act are of the opinion, however, that by causing the elimination of false labeling, upon which the sale of such preparations largely depends, the evils and dangers resulting from their indiscriminate use can be greatly checked and substantial aid rendered to public health officials.

SALE OF FLAVORING EXTRACTS AND TOILET PREPARATIONS RESTRICTED TO LEGITIMATE USE.

Commissioner Roper has declared that greater precaution must be taken to prevent the marketing, under the guise of legitimate and necessary medicinal toilet and flavoring extracts, of preparations which do not conform to the standards fixed by the regulations and which are easily and generally diverted to beverage uses. Hereafter, he states, all manufacturers of preparations in which non-beverage alcohol is authorized to be used will be uniformly held for tax and penal liability where their products have been found to be marketed and manufactured otherwise than according to the regulations.

CHANGES IN THE PROHIBITION ENFORCEMENT BILL.

The National Association of Retail Druggists was successful in getting incorporated by the Senate Judiciary Committee into the prohibition enforcement bill as reported to the Senate an amendment under which retail druggists will be able to obtain permits for the purchase of alcohol for legitimate purposes that are good if issued after August 31 in any

year until December 31 of the year following instead of being good only for 90 days, as previously provided.

Amendments to the bill permit manufacturers and wholesale druggists to advertise alcohol in "business publications or trade journals circulating generally among manufacturers of lawful alcoholic perfumes, toilet preparations, flavoring extracts, medicinal preparations and like articles;" the word "non-potable" has been stricken from the section exempting from the provisions of the act denatured alcohol, medicinal perparations, patented and proprietary medicines and toilet, medicinal and antiseptic preparations and solutions. The phrase "unfit for beverage purposes" has been retained. The definition of flavoring extracts and syrups exempt from the bill is that they must be "unfit for use as a beverage." It is provided hat no more alcohol shall be used in the manufacture of extracts, syrups, etc., which may be used for beverage purposes than is necessary for the extraction or solution of the elements contained therein, and the preservation of the article.

COURT DECISION ON HARRISON NARCOTIC LAW ISSUED BY TREASURY DEPARTMENT AS T. D. 2887.

The decision as issued is as follows:

1. Narcotics—Constitutionality of Harrison Act—Section 2 of the act of December 17, 1914, known as the Harrison Anti-Narcotic Drug Act, being a revenue measure, is not unconstitutional as an invasion of the police power reserved to the States.

2. Same—Expert testimony by physicians as to manner of treating drug addicts—It is proper to permit physicians to testify as experts as to the well recognized methods among the medical fraternity of treating persons addicted to the use of narcotics for the purpose of curing th m of the habit, with a view to showing that a physician did not dispense narcotics in a legitimate manner. Evidence from physicians to the effect that unless confined an addict is never cured of the habit was properly admitted

3. Same—Object of Harrison Act—The object of the narcotic act, although enacted under the taxing power of Congress, is to prevent the growing use of narcotics, deemed a menace to the nation by Congress, the act having a moral end as well as revenue in view.

4. Same—Proviso of Act—Sales of Physicians. The fact that a physician when "in the course of his professional practice only" is excepted from the requirement that narcotics shall be dispensed upon an official order form does not provide the authority for a physician to sell narcotics, if he does not do so in good faith, for the purpose of securing a cure of one suffering from an illness, or to cure him of the morphine habit. The exception referred to must be construed strictly, in accordance with the general rule, and those who set up any such exception must establish it as being within the words, as well as within the reason, thereof. A contention that the act does not make it an offense for a registered physician to sell narcotics under any circumstances is without basis.

5. Same—Personal attention to addicts by physicians—A physician who furnished narcotics to an addict in decreasing quantities and claims to be attempting a cure of the addiction is acting contrary to the narcotic act when it is shown that the physician has not personally attended the addict, or has given the addict some personal attention, but not sufficient to show, in connection with other facts and circumstances, that he acted in good faith.

6. Same—Indictment for violating Harrison Act—Evidence as to sales to third persons. The illegal dispensing of narcotics may be made a separate count in the indictment as to each addict involved, and evidence may be admitted tending to prove sales of the drug by the physician to persons other than those mentioned in the indictment, such evidence to be considered by the jury in determining the intent, or system, or knowledge on the part of the physician in selling to the persons set out in the indictment.

PAREGORIC SALES RESTRICTED.

Sales of paregoric and other similar exempted articles for any but legitimate medicinal purposes are not permissible under the Harrison Law, according to an interpretation made by a United States Court in the Oliver case. In that decision the court held that a sale of paregoric to a narcotic addict for the satisfaction of a craving, and not for legitimate medicinal use, is a violation of the Harrison Law. In view of the susceptibility of paregoric to illegitimate usage, it is recommended that all pharmacists restrict their salts of this and similar

preparations as much as possible, assuring themselves at all times that supplies are not diverted to illegitimate purposes, which might be done by fixing a low maximum quantity to be supplied to any one customer at one time.

TREASURY DECISIONS APPLYING TO MEDICINAL ARTICLES AS RELATED TO THE EXCISE TAX REQUIREMENTS OF REVENUE ACT OF 1918.

Articles Given Away as Free Samples.—Article 5 of regulations 51 is supplemented by adding thereto the following:

"Articles given away as free samples are not subject to tax if a notation is made on the package that the article is not to be sold for consumption or use, but is a free sample. If an article taxable under Section 907 is given away free with the purchase of another article taxable under this section the tax shall be computed upon the total amount paid and the proper amount of stamps affixed to the package."

"When a dealer dispenses bromo seltzer, seidlitz powders, etc., to customers he will be considered the consumer and must affix the proper stamps to the bottle."

Sales to the United States or a State.—Article 8 of regulations 51 is hereby amended to read as follows:

"Articles sold to the United States or to a State or a political sub-division thereof for use in carrying on its governmental operations are not taxable."

Cough Drops.—Article 16 of regulations 51 is supplemented by adding thereto the following:

"Where cough drops are held out or recommended as remedies or specifics for a cold or affection of the throat and are sold by or for a dealer or his estate for consumption or use, such sale is subject to a tax of 1 cent for each 25 cents or fraction thereof of the amount paid for the cough drops. If two or more packages of cough drops, troches or lozenges recommended as a remedy for a cold or for an affection of the throat are sold for 25 cents or less, the tax collectible is 1 cent, provided the container or wrapper in which the packages are sold bears the requisite tax stamp or stamps."

Serums, Vaccines, Etc.—Article 17, subdivision (d), of regulations 51 is supplemented by adding thereto the following:

"Chemical preparations such as serums, vaccines, antitoxins, and salvarsan when prepared by open formula advertised to the medical profession only and the labels and directions indicate use only by the medical profession, are exempt from tax."

COÖPERATION CONTEMPLATED IN A MEASURE BEFORE CONGRESS IN THE CARE OF DRUG ADDICTS.

Senator France, of Maryland, has introduced a bill in Congress whereby States cooperating with the Federal Government may utilize hospitals of the Army and Navy for the care and treatment of drug addicts. Part of the enacting clause reads:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that the Secretary of the Treasury is authorized to coöperate with the States through their respective State boards or departments of health, narcotic commissions or other State or municipal officials in charge of the control of the production or distribution of narcotics and habit-forming drugs, or in charge of the care and treatment of drug addicts, in contributing to the care and treatment of drug addicts resident within the confines of the respective States, but no money appropriated under this act and apportioned to any State shall be expended therein until its Legislature shall have assented to the provisions of this act, except that until the final adjournment of the first regular session of the Legislature held after the passage of this act the assent of the Governor of the State shall be sufficient and until an equal sum has been appropriated by the Legislature or provided by municipalities therein or by private contributions from within the State for the prevention or control of drug addiction and the care and treatment of drug addicts.

PUBLICATIONS RECEIVED.

Twentieth Report of the Michigan Academy of Science; Notes on the Michigan Flora; The Yellow Flowered Cypripemiums; The Trillium Grandiflorum Group. Oliver Atkins Farwell.

Tsuga Americana (Mill.) Farwell, A Final word; Bromelica (Thurber): a New Genus of Grasses; Necessary Changes in Botanical Nomenclature. Reprints from Rhodora,

Journal of the New England Botanical Club, Vol. 21, 1919. Oliver Atkins Farwell.

Increased Tolerance and Withdrawal Phenomena in Chronic Morphinism. A. G. DuMez, Ph.D.

Botanical Nomenclature of the Pharmacopoeia. Reprint from The Druggists' Circular, Vols. LXII and LXIII. Oliver Atkins Farwell.

The Spatula Soda Water Guide and Book of Formulas for Soda Water Dispensers, by E. F. White. 5th Edition. Spatula Publishing Co., Boston, Mass.

The Supplement to the United States Naval Medical Bulletin, July, 1919. Published for the information of The Hospital Corps of the Navy Issued by the Bureau of Medicine and Surgery, Navy Department.

Proceedings of the Thirty-sixth meeting of the Maryland Pharmaceutical Association, held at Braddock Heights, Maryland, June 25 to 28, 1918.

Proceedings of the Forty-first Annual Meeting of the Pennsylvania Pharmaceutical Association, held at Wilkes-Barre, Penna., June 25 to 27, 1918.

UNITED STATES PUBLIC HEALTH SERVICE.

LIST OF CHANGES OF DUTIES AND STATIONS OF COMMISSIONED AND OTHER OFFICERS OF THE UNITED STATES PUBLIC HEALTH SERVICE, FOR THE PERIOD ENDED AUGUST 13, 1919.

Pharmacist G. W. Iltis. Relieved at Alexandria, La. Proceed to Galveston, Tex., for duty in the outpatient office. July 12, 1919.

Asst. Chemist E. J. Casselman. Relieved at Springfield, N. J. Return to Station at Washington, D. C. July 19, 1919.

Biologist Bruce Mayne. Report to Surgeon L. D. Fricks, Memphis, Tenn., for duty in investigations of malarial. July 17, 1919.

Pharmacist L. C. Spangler. Relieved at Boston, Mass. Proceed to Washington, D. C., for duty in the Marine Hospital Division. July 23, 1919.

Pharmacist Carl Stier. Relieved at Norfolk, Va. Return to Station at Baltimore, Md.

Pharmacist H. B. Megaw. Relieved at the Purveying Depot, Washington, D C. Proceed to Norfolk, Va., for duty at the Custom House. July 23, 1919.

Pharmacist William G. Beucler. Proceed to New York, N. Y., St. Louis, Mo., Chicago, Ill., Cleveland, Ohio, Pittsburgh and Philadelphia, Pa., for conference in the matter of closing up the offices of Industrial Hygiene in those cities. July 19, 1919.

Pharmacist David Gleason. Relieved at the Quarantine Station, Galveston, Texas. Proceed to the Marine Hospital, Boston, Mass., for duty. July 22, 1919.

Pharmacist John H. Hayes. Relieved from duty at the Custom House, Norfolk, Va. Proceed to Public Health Service Hospital at Sewell's Point for duty. July 22, 1919.

Pharmacologist A. G. DuMez. Proceed to New York to attend the annual convention of the American Pharmaceutical Association, August 25–30. July 25, 1919.

Pathologist Arthur Lederer. Relieved at the Hygienic Laboratory Washington, D. C. Proceed to the Marine Hospital, Chicago, Ill., for duty. July 29, 1919.

CASUALTY.

Pharmacist T. V. O'Gorman* died at the Marine Hospital, Port Townsend, Washington, July 16, 1919.

* Pharmacist T. V. O'Gorman joined the American Pharmaceutical Association in 1897.

JOURNAL ANNOUNCEMENTS.

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Further information will gladly be furnished by any of the officers of the Association and members.

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